VOL. XXVIII. — No. 8. AUGUST 1951.



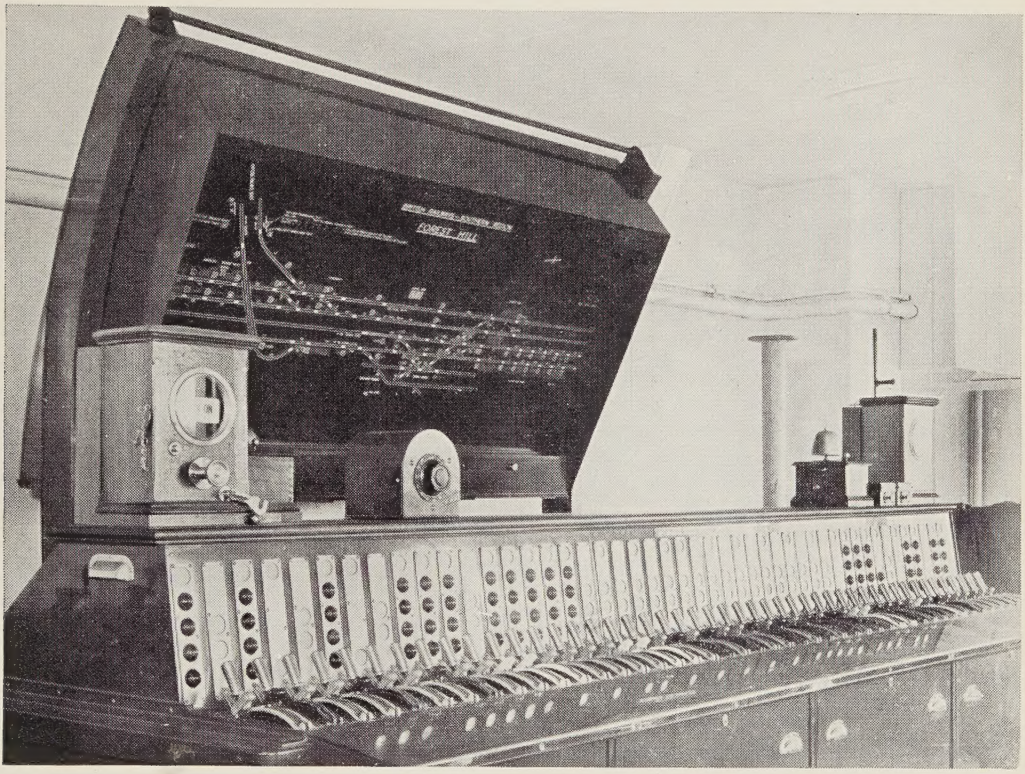
Monthly

# Bulletin of the International Railway Congress Association

(English Edition)

# "WESTLYTE" ILLUMINATED DIAGRAMS

## employing the new system of "piped lighting"



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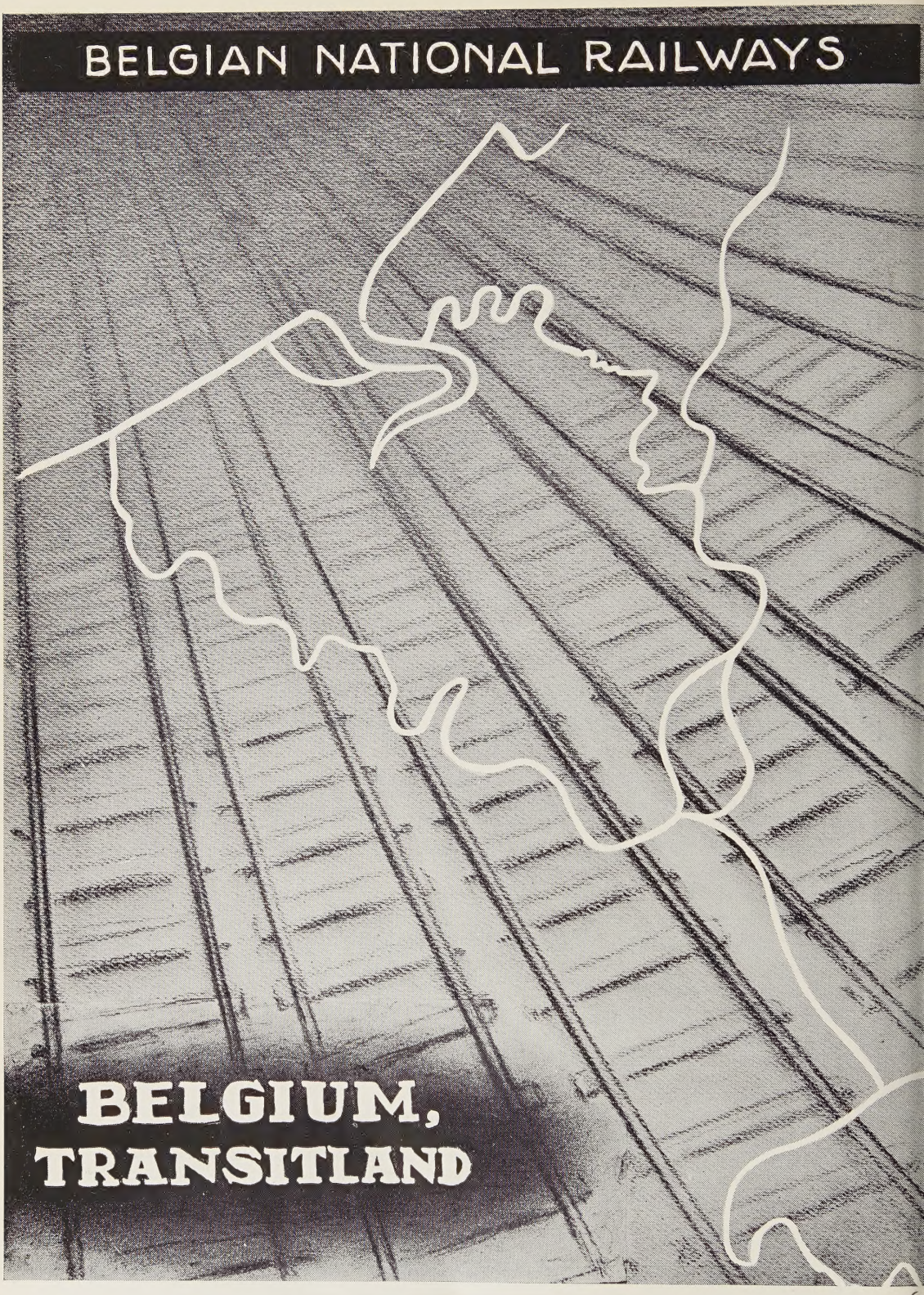
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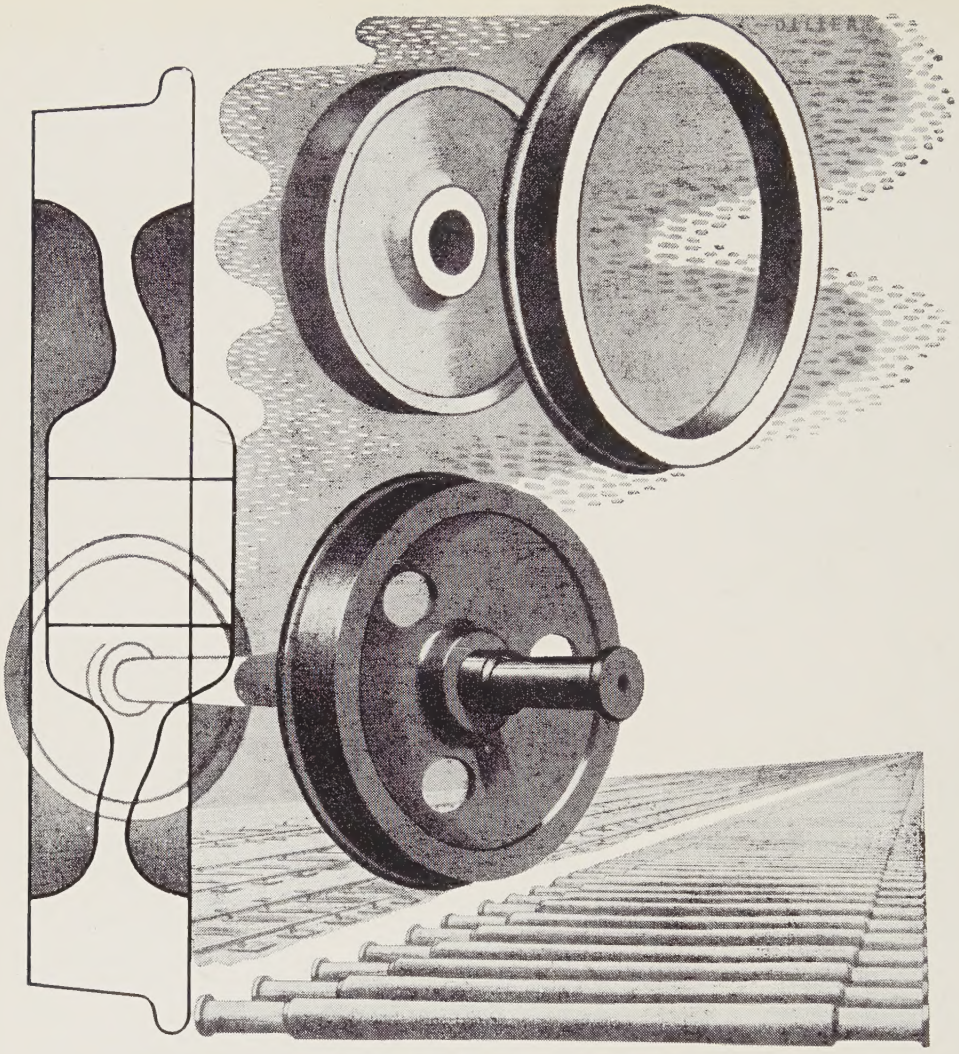
BELGIUM,
TRANSITLAND



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# Alphabetical Index of Advertisers

# Bulletin of the International Railway Congress Association

## CONTENTS OF THE NUMBER FOR AUGUST 1951.

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OF THE

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**An edition in French is also published.**

Vol. XXVIII. — No. 8. August 1951.

# BULLETIN

OF THE

# INTERNATIONAL RAILWAY CONGRESS

ASSOCIATION

(ENGLISH EDITION)

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FIFTEENTH SESSION

**Rome : 25th September-4th October 1950.**

# GENERAL PROCEEDINGS

## 3rd Section : WORKING

## INAUGURAL MEETING

**September 26th, 1950, at 9 a. m.**

PROVISIONAL PRESIDENT : DR. ENG. PROF. N. LALONI,
MEMBER OF THE PERMANENT COMMISSION OF THE ASSOCIATION.

— The Meeting began at 9 a.m.

**The President** (in French). — Gentlemen, in accordance with the Rules the Permanent Commission of the Association requested me to preside over the Inaugural Meeting of the 3rd Section and to make up its Bureau. *(Applause.)*

On behalf of the Permanent Commission, I propose that Dr. Eng. G. C. PALMIERI, Chef de Service principal, Conseiller d'Administration des Chemins de fer de l'Etat italien, be elected as *President*. As you know, Mr. PALMIERI is President of the IVth Commission. — Technical Working, of the International Railway Union, and I am sure that he will preside over your works in the most efficient manner. *(Applause.)*

*Dr. Eng.* PALMIERI *took the Chair.*

**The President** (in French). — I wish to thank very sincerely Mr. LALONI for the high terms he has just spoken in my favour, praise that I believe I do not merit.

I am very pleased to be able to be associated in your works which — I have no doubt — will result in summaries, making a success of the present Congress.

I hope that all the delegates will assist me in the task, which will not be easy, to preside over the debates in order to finish our works within the time allowed.

Gentlemen, for the constitution of the Bureau of the Section, I propose to appoint :

as *Vice-Presidents :*

Dr. E. SEIDLER, General Manager of the Austrian Federal Railways;

Mr. H. VAN GALEN, Directeur Général des Transports au Ministère des Transports et du Waterstaat (Netherlands), member of the Permanent Commission of the Association;

Mr. R. DA COSTA COUVREUR, ancien Président du Conseil Supérieur des Travaux Publics et des Communications du Portugal, member of the Permanent Commission of the Association, and

Mr. Ranald J. HARVEY, Consulting Engineer to the Government of New Zealand (Railways), member of the Permanent Commission of the Association; and as *Principal Secretary :*

Mr. E. VOORDECKER, Chief Engineer, Belgian National Railways.

*(Marks of approval and applause.)*

— Following the proposal of the PRESIDENT the Section completed its Bureau and drew up the agenda.

## QUESTION VII.

# Organizing methods to be used in large marshalling yards and terminals, to reduce to the minimum the cost per wagon shunted.

**Determination of the staff and number of shunting engines needed.**
**Capacity and control of the efficiency of the marshalling yards.**
**Recording and numbertaking arrangements in the arrival and departure yards.**
**Statistics and traffic analysis by the control-room.**
**Braking and retarding arrangements.**
**The formation of trains for departure.**

### Preliminary documents.

Report (Great Britain and Northern Ireland, Dominions, Protectorates and Colonies, North and South America, China, Burma, Egypt, India, Pakistan, Malay States, Iran and Iraq), by E. W. Rostern. (See *Bulletin*, April 1950, p. 409 or separate issue N° 9).

Report (Belgium and Colony, Luxemburg, Norway, Denmark, Holland and Colonies, Switzerland, France and Colonies, Poland and Syria), by A. Lamarque. (See *Bulletin*, June 1950, p. 1093, or separate issue No. 23).

Report (Italy, Spain, Portugal and Colonies, Rumania, Bulgaria, Sweden, Turkey, Greece, Czechoslovakia, Jugoslavia, Finland, Hungary and Austria), by M. Cirillo. (See *Bulletin*, June 1950, p. 1227, or separate issue No. 25).

*Special Reporter :* M. Cirillo. (See *Bulletin*, October 1950, p. 2079).

## DISCUSSION BY THE SECTION.

### Meeting held on September 26th, 1950.

President : Dr. G. C. Palmieri, Engineer.

— The Meeting began at 9.15 a.m.

**The President** (in French). — Gentlemen, the first item on our agenda is the examination of Question VII entitled as follows :

« *Organising methods to be used in large marshalling yards and terminals to reduce to the minimum the cost per wagon shunted.* »

I shall be glad if the Special Reporter

will kindly make a few introductory comments to the actual Summaries.

**Mr. Cirillo,** *Special Reporter* (in French). — The study of this question has led us to look for the most appropriate methods of organisation, in order to operate as economically as possible the large marshalling yards upon which, in sum, the cost per wagon shunted depends.

As such yards are equipped with important specialised equipment and are a large unit composed of several yards where in general many men and engines are employed, the work is rationally organised, taking into account the various elements which affect the working of the yard which all have to be harmonised if the maximum output is to be obtained.

For this reason the Reporters based their enquiry upon a study of the principles followed in the different countries for the organisation of the work of marshalling yards, and on the detailed analysis of certain fundamental operations taking place therein. The object of this was to ascertain the suitable elements of comparison as well as the necessary information for arriving at the clearest and most complete knowledge of the best solutions to this important problem.

Although in principle, the enquiry should have been limited to large yards with up-to-date equipment, it also appeared useful to obtain details about other less modern yards, which whilst enlarging the basis of the investigation made it possible to collect a great amount of information.

According to practice, a questionnaire covering the following 9 points was sent to the Administrations.

1. General measures likely to improve the output of the yards. Results obtained.
2. Control and general supervision of the work.
3. Marking off.
4. Inspecting and repairing wagons.
5. Shunting.
6. Braking and skid braking.
7. Making up the trains.
8. Shunting engines.
9. Savings to be made when the number of wagons to be dealt with is less than the total capacity of the yard.

The replies received brought out the fact that generally speaking there is agreement in the principles followed and methods adopted by most of the Administrations consulted as regards the organisation of the work and the carrying out of the main operations. Certain divergencies found in the way in which these same principles and methods are applied are often due to the special working conditions and equipment at certain yards, which are not always comparable.

On the other hand, certain important divergencies as regards matters of opinion or technique were found on certain points to which we should like to draw your attention. In particular it was question of the following points :

— Co-ordination and control of the work carried out in a yard by means of control posts;

— Advantages of doing away with the checking of wagons on arrival and

departure in most of the yards, in order to make economies in the expenditure on staff;

— Advantages of adopting the method of making up stopping trains of several cuts by the so-called « simultaneous » method;

— Introduction of bonus systems to increase the output of the shunters.

Considerable importance must also be attached, in our opinion, to the measures to be adopted should the traffic fall off, a situation which is often met with under present conditions, especially on account of road competition, and to the selection and professional training of the staff employed in marshalling yards, which is one of the fundamental factors for a satisfactory output.

In the special report summing up the three reports prepared on this question, the results of our enquiry were collected together in well defined paragraphs concerning :

1. measures likely to improve the general output of marshalling yards;

2. the co-ordination and control of the work of the marshalling yard in order to increase the output; the selection and utilisation of shunting engines;

3. the methods applied and principles governing the special work done in marshalling yards;

4. the measures to be adopted should the traffic fall off;

5. the importance of the part played by the staff in the output of marshalling yards;

6. comparison and general control of the results obtained and the adaptation of the staff and equipment of the yard to variations in the traffic.

Having said this, I now have the privilege of submitting for your consideration the summaries of the special report.

**The President.** — If no one wishes to say anything, I suggest that we now consider the summaries one by one and discuss them point by point. I think this will facilitate our work. (*Agreed.*)

We will therefore begin with point 1 : *General output of the yard :*

**Mr. Cirillo.** — *Summary 1 : Labelling the wagons.*

1. The use by the consigning station of coded indications on the labels of wagons showing the destination station and legible at a distance facilitates, in countries of any size, the work of the yard employees and reduces the risk of wagons going astray.

**The President.** — Any comments?

**Mr. Moulart,** *Belgian National Railways* (in French). — Such labelling is important in the case of a dense and complicated system, i. e. when the wagons can go by various routes. It is not so much due to the size of the railway but its complexity, its density.

I think we should add after « comparatively large countries » the words « with dense and complicated railways ».

**The President.** — Is everyone agreed about this addition? We might perhaps say : « ... in countries of a certain size with a sufficiently dense traffic ».

**Mr. Moulart.** — The possibilities of alternative routes must be taken into account.

**The President.** — The routing may present difficulties. Some idea of its complexity must be given. It is possible to have a dense traffic in particular in a given direction.

**Mr. Rostern,** *Reporter.* — As regards the English translation, criticism has been raised in connection with the statement « in countries of any size ». It is suggested that the reference should be rather to the density of traffic than to the size of countries.

**Mr. Moulart.** — That is why it should be stressed that it is question of a dense and complicated railway system.

**The President.** — We might say : « in countries where the railway is of a certain extent and there is a certain density of lines ».

**Mr. Cirillo.** — I agree to saying : « ... at least on railways of a certain size or density of lines... ».

**The President.** — I do not think there are any other objections and we might adopt the summary with this slight modification.

*Summary 1 is adopted in the following form :*

« 1. The use by the sending station of coded wagon labels showing the destination station and legible at a distance facilitates, on railways of some importance *or with numerous lines*, the work of the yard staff and reduces the risk of wagons going astray. »

**Mr. Cirillo.** — *Summary 2 : Notification.*

2. Preliminary notification of certain details of the composition of incoming trains enables the yard better to estimate and organise its work.

**The President.** — Are there any comments ?

— *Adopted without comment.*

**Mr. Cirillo.** — *Summary 3 : Timetables.*

3. Though the timetables must be fixed first of all in such a way as to ensure the best forwarding of the wagons and most satisfactory services, they must also to the greatest possible extent take into account the highest efficiency of the yard, especially when there are insufficient reception or departure sidings.

**Mr. Vanderborght,** *Belgian National Railways* (in French). — We would like the following sentence to be added : « These must also comply with the legitimate requirements of the public ». Obviously we would retain the summary.

**Mr. Cirillo.** — I do not quite agree with what Mr. VANDERBORGHT has just suggested. I think that the proposed addition is not absolutely necessary. We are referring here to the timetables of trains ending or starting at the marshalling yard. We stated in the report that several factors had to be taken into account, and in particular the client's point of view, so that wagons are collected at certain hours and available in time for the opening of the markets.

I am of the opinion that in the summary, which is already rather detailed, it is not necessary to add that the timetables should comply with the requirements of clients. This is a fundamental principle.

**Mr. Barrington-Ward,** *British Railways.* — It is absolutely necessary that all trains follow the timetables.

**Mr. Cirillo.** — The timetables should be so arranged as to make it possible to guarantee that the trains will leave on time as far as possible. When we state : « Though the timetables must be fixed first of all in such a way as to ensure the best forwarding of the wagons... », I think that this means that both the time the goods are collected and the best arrival time to suit the clients are taken into account.

**Mr. Vanderborght.** — I will not press the point.

**The President.** — Summary 3 can therefore be maintained in its original form. Are there any objections?

— *As no other objections were raised, Summary 3 is adopted.*

**Mr. Cirillo.** — *Summary 4 : Allocation of sidings.*

4. Careful allocation of the marshalling sidings, based upon the installations of the yard and the kinds of trains to be made up with the wagons shunted onto the same siding, has a very good result upon the output of the yard.

**Mr. Vanderborght.** — I think that the words « onto the same siding » are superfluous. The allocation of the sidings should take into account all the trains to be made up whatever the sidings. We might say : « ... and the kinds of trains to be made up with the wagons shunted has a very good result upon the output of the yard ».

**Mr. Lamarque,** *Reporter.* — The allocation of a siding must be based on the wagons which have to be shunted on this siding. Empty wagons, which run slower than loaded wagons, should be shunted on a central siding without any curve or with a curve of a radius higher than the lateral sidings.

I think that the expression « onto the same siding » should be retained. Each siding should get a given number of wagons.

**Mr. Vanderborght.** — As soon as we say : « and the kinds of trains to be made up » all the trains have to be made up, quite apart from the shunting siding. The trains must be made up with the wagons that have been shunted. It seems to me that the modification I suggested makes the text clearer.

**Mr. Rostern,** *Reporter.* — The whole point hinges on the kind of wagons; it was intended by the Reporters to differentiate between mineral, goods, empties trains, etc., and much, of course, depends on whether there is the necessary siding accommodation available to make these separations.

**The President.** — It seems to me that we could cross out « onto the same siding ».

**Mr. Moulart.** — Each siding has to be allocated according to the wagons shunted onto it.

**The President.** — Are there any comments? Is anyone against leaving out the words « onto the same siding »?

As no objection has been raised, we will leave out the words « onto the same siding»

and *the Summary 4 will be modified as follows :*

« 4. Careful allocation of the marshalling sidings, based upon the layout of the yard and the kinds of trains to be made up with the wagons shunted, has produced good results on the turnover of the yard. »

**Mr. Cirillo.** — *Summary 5 :*

*Co-ordination (and control) of the operations of the yard.*
*Adaptation of resources to requirements.*

5. Co-ordination of the different operations carried out in the yard is essential for good output.

This is assured in the first place by the preparation of preliminary working programmes or harmonograms showing the way the different engines and gangs of the various parts of the yard are to be used in each shift. These programmes, which differ from day to day according to the traffic, should regulate in particular the way the different preliminary operations before shunting are carried out simultaneously.

In addition, the concentration of all useful data in the hands of a single official with extensive telephonic communications throughout the yard makes it possible to harmonise and control all the work and adapt requirements to resources from day to day to the fullest possible extent.

To carry out these indispensable duties, the setting up of a control post which can follow the movements of the trains and engines very closely as well as the way the different operations are proceeding, is an excellent expedient in large marshalling yards, especially when these consist of several scattered parts.

**Mr. Barrington-Ward.** — I do not like the word « control ». I would sooner see the word « planning » because in many countries we have systems of control which cover the whole railway network and we do not want to have one word meaning two different things. I suggest « planning » not « control ».

**Mr. Rostern,** *Reporter.* — I should like to point out that the term « control post » is intended to refer to the establishment which exists in certain yards, within the yardmaster's office, to maintain contact with all points in the yard and to supervise both engine movements and the yard working. It is virtually a section of the yardmaster's office which is responsible for current yard working and has no reference to the main running lines.

**Mr. Lamarque.** — Here we have two different ideas : to harmonise and to control. One of the duties of the control staff is to control the work. It is impossible to separate control from orders.

**Mr. Cirillo.** — I would like to add that the idea of planning is already very clearly given in the summary. We state in fact « This is assured in the first place by the preparation of preliminary working programmes or harmonograms ». The idea of control is different.

After these programmes have been prepared, we control the way the operations are carried out and co-ordinate all the different efforts.

**Mr. Lamalle,** *Permanent Commission of the Association.* — The need for harmonograms or organisation of the work has just been stressed. Before marshalling begins, the train is identified by a rolling stock inspector. The different preparatory operations have to be carried out not only simultaneously but during the same period of time. If the

work requires 20 minutes and another job takes 10 minutes, two men will have to be put on that requiring 20 minutes so that all the work is completed at the same time.

**Mr. Lamarque.** — I would like to point out to Mr. Lamalle that the text of summary 5 says precisely : « These programmes which differ from day to day according to the traffic should regulate in particular the way the different preliminary operations before shunting are carried out simultaneously ». It seems to me that it is made quite clear that the operations are to be carried out simultaneously.

**Mr. Lamalle.** — Simultaneously does not necessarily mean at the same time.

**The President.** — It is of great value to reduce the time required for the work, but this must be stated in the summary. Is the wording of the summary sufficient? I do not know if « simultaneously » quite expresses the idea.

**Mr. Lamarque.** — In the last sentence of the second paragraph, instead of « regulate » we might say « coordinate ». « These programmes... should coordinate... ».

**Mr. Voordecker,** *Principal Secretary.* — The working programme for the locomotives and gangs makes provision for the work to be carried out simultaneously.

**Mr. Lamalle.** — As soon as it has been well thought out, I agreed.

**Mr. Moulart.** — I suggest a slight modification to the second paragraph, as follows : « This is assured in the first place by the preparation of preliminary working programmes or harmonograms showing for each alteration in the services *or foreseeable traffic variations*, the way the engines and gangs of the different parts of the yard are to be used », i. e. by adding « or foreseeable traffic variations ». I have however drawn up a new text for the whole summary, which expresses the same idea but in a more concise way.

**Mr. Vanderborght.** — I would like to alter three words in the last paragraph of the Special Reporter's summary which do not seem to me sufficiently categorical. The summary states : « To carry out these indispensable duties, the setting up of a control post which can follow the movements of the trains and engines very closely as well as the way the different operations are proceeding *appears very opportune* in large marshalling yards, especially when these consists of several scattered parts ». I would like to alter the phrase : « appears very opportune ». No one would deny the necessity for a control post in large marshalling yards. I suggest saying « ... appears *necessary* (instead of *very opportune)* in large marshalling yards..., etc. ».

**Mr. Cirillo.** — Personally, I see no objection, and the Reporters agree with me. But this is not the general opinion of the Administrations consulted. Certain Administrations have another way of looking at control posts. Others have taken into account the cost of such

control posts. This was why we could not be affirmative in this connection.

(Mr. MOULART *handed the* PRESIDENT *the new text suggested by him.*)

**The President.** — I think that to satisfy Mr. LAMALLE we might alter the last sentence of the second paragraph by stating : « These programmes which differ for heavy and slack days of the week should *assure* (instead of *regulate*) in particular the way the different preliminary operations before shunting are carried out at the same time ».

**Mr. Voordecker.** — Simultaneously is doing the work at the same time.

**Mr. Marin,** *Italian State Ràilways* (in French). — I prefer « at the same time ».

**The President.** — I propose to read the modifications suggested by Mr. MOULART. Here is the suggested text :

« Coordination of the different operations carried out in the yard is essential for good output.

« This is assured in the first place by the preparation of preliminary working programmes or harmonograms showing the way the different engines and gangs of the various parts of the yard are to be used in each shift.

« These programmes will particularly provide for the carrying out of certain preliminary operations to be done at the same time and which are required for shunting. In addition, the concentration of all the useful data in the hands of the yardmaster with the necessary extensive telephonic communications throughout the yard makes it possible to carry out the programme to the best possible extent.

« In order to carry out these measures a « control post » appears to be very desirable in large marshalling yards, especially if these have several independent yards. »

**Mr. Tribelhorn,** *Swiss Federal Railways* (in French). — I agree with this text but not with Mr. VANDERBORGHT's suggestion to replace « opportune » by « necessary ».

**Mr. Vanderborght.** — I withdraw my suggestion.

**The President.** — Mr. VANDERBORGHT has withdrawn his suggestion because all the Administrations are not in agreement about it.

The word « simultaneously » has been retained in the new text. If the French delegates are of the opinion that « simultaneously » is sufficiently clear, we have no objection.

**Mr. Lamarque.** — I have no objection, but I would have preferred, even though it involved retaining a few more lines, leaving the distinction made between the programmes for heavy and slack days of the week. It is advisable to make the yards carry out different operations on Sundays. In my opinion « foreseeable traffic variations » is less precise than the old wording.

**The President.** — It seems to me that this new wording is more explicit. The traffic on heavy and slack days is some-

thing that can be foreseen. By saying « foreseeable » we cover every case that can be foreseen.

**Mr. Cirillo.** — I think the intention is to make what we suggested more concise without making any fundamental alteration. It is possible, especially as we return to the question of adapting the traffic to slack days, heavy days, seasonal weekly or daily and permanent variations. In my opinion, this suggestion can be accepted.

**The President.** — The Special Reporter is in favour of the suggestion made. As no other comments have been made, *Summary 5 is adopted in the new form suggested by Mr.* Moulart, *which I read you just now.*

This brings us to the chapter dealing with *Shunting engines.*

**Mr. Cirillo.** — *Summary 6 : Shunting engines.*

6. The shunting engines used in marshalling yards must be of a suitable type for the special work required of them. In non-electrified yards, the Diesel engine has proved its worth wherever it has been used, from the point of view of having a higher output and greater flexibility than the steam locomotive.

**Mr. Barrington-Ward.** — I wish to point out that the Diesel engine costs much less than the steam engine.

**Mr. Marin.** — The second sentence begins by saying : « In non-electrified yards... ». Why « non-electrified » ? It is not necessary to say this.

**Mr. Cirillo.** — I would like to point out that in electrified yards, nothing but electric locomotives are used.

**Mr. Marin.** — In large marshalling yards, for shunting and clearing the marshalling sidings, we always use steam locomotives more than anything else. Diesel locomotives are more economical, but the use of electric locomotives is a more difficult matter.

**Mr. Cirillo.** — The Swedish Railways use electric locomotives on a large scale. We had to take account of the replies received.

**Mr. Marin.** — The Diesel engine has proved itself to be the most economical; this has been found in all yards working under the same conditions, whether electrified or not. The question here is the economic efficiency of the engine. That is why I want the opening words « In non-electrified yards » left out.

**The President.** — This remark is very much to the point. It is stressed that in marshalling yards the services assured by steam or Diesel locomotives are more suitable than marshalling operations by electric locomotives...

**Mr. Rostern.** — There has been some discussion about « in non-electrified yards ». It was proposed by one of the delegates that we should delete the words « in non-electrified yards » from the Summary. One of the subsequent delegates suggested that this was not correct in electrified yards.

It is, therefore, proposed that we should alter the text to say that the Diesel engine has proved its worth over steam, without reference to electric.

**Mr. Goursat,** *French National Railways* (in French). — The Special Reporter did not suggest making a comparison between the three types of locomotives. He only compared the Diesel and steam locomotives. Everyone agrees that the Diesel locomotive is easier and more economical than the steam locomotive. Consequently I am also of the opinion that the words « In non-electrified yards » should be suppressed. I suggest simply saying : « The Diesel engine has proved its worth wherever it has been used from the point of view of having a higher output and greater flexibility than the steam locomotive ».

**The President.** — In my opinion, we should not raise the problem of the « Diesel engine » and « electric engine » which seems too controversial to me.

We might adopt the suggestion to omit the words « in non-electrified yards ». We are limiting the issue here to the steam locomotive and the Diesel locomotive. There is no question of the electric locomotive.

I think we might adopt Summary 6 as suggested, i. e. amended as follows :

« 6. The shunting engines used in marshalling yards must be of a suitable type for the special work required of them. The Diesel engine has proved its worth wherever is has been used, from the point of view of having a higher output and greater flexibility than the steam locomotive. »

Do you agree?

— *Summary 6 was adopted in this form.*

**Mr. Cirillo.** — *Summary 7 :*

7. In the case of steam locomotives, it is necessary to take special steps to minimise interruptions due to the need to refuel or for maintenance purposes. It is often of value to install a fuelling post in the yard where water and coal can be taken on.

**The President.** — I do not think there are any comments.

**Mr. Lamarque.** — I suggest replacing the word « often » by « nearly always ».

**The President.** — Does everyone agree to Mr. LAMARQUE's suggestion? *(Agreed.)*

— *Summary 7 was therefore adopted in the following form :*

« 7. In the case of steam locomotives, it is necessary to take special steps to minimise interruptions due to the need to refuel or for maintenance purposes. In *almost every case* it is of value to install a fuelling point in the yard where water and coal can be taken. »

**Mr. Cirillo.** — *Summary 8 :*

8. The use of train locomotives for shunting is not to be recommended, except in the case of certain special operations of limited magnitude.

**Mr. Vanderborght.** — I suggest suppressing this summary. Summary 6 states in fact : « The shunting engines used in marshalling yards must be of a suitable type for the work required of them ».

The shunting engines must be suitable for the work of marshalling. Train locomotives are not suitable for this type of work. I do not see any need for mentioning them in these summaries.

**Mr. Cirillo.** — I think I interpreted the Reporter's idea. We mentioned the use of train locomotives in order to compare the two types of locomotives. Certainly shunting engines are not like train locomotives. But in view of the fact that from time to time, sometimes fairly often — it depends on the installations — we have to do a certain amount of shunting with train locomotives, we wanted to stress the fact that train locomotives are sometimes used for operations of little importance, such as rapidly hauling a wagon to some part of the yard. But they should not be used continually for shunting. I agree that it is not absolutely necessary to point this out, but it seemed to us as well to mention the fact that, although it is not recommended, the train locomotives can be used for certain unimportant shunting operations.

**Mr. Barrington-Ward.** — I think that this paragraph should be re-written and should be very much stronger, as under :

« The use of train locomotives for shunting is forbidden without special permission and should be returned to the Depot or to their next train without delay. »

**Mr. Delacarte,** *French National Railways* (in French). — Mr. Barrington-Ward's remark is not quite true as far as the French Railways are concerned, except perhaps in the case of steam train locomotives. But we have Diesel-electric engines and Diesel engines, which are used both for shunting and train services; these are Diesel engines. This kind of train locomotive is suitable for shunting. In the case of certain stopping trains, in shuttle working, we use the train locomotive for shunting during slack periods, and inversely, we have some Diesel shunting engines which are used for train services during certain periods of the day.

If we state this should not be done, it would be necessary to specify that this refers to the steam engine.

**Mr. Cirillo.** — If I heard alright, there are certain Diesel train locomotives which are used as shunting engines. Nonetheless today most of the train locomotives differ from the shunting locomotives. To my way of thinking, summary 8 is important.

To return to M. Delacarte's remark, I think we should say : « is generally not recommended » or « generally speaking, is not recommended ».

**Mr. Delacarte.** — My comment was intended to point out that this use is not forbidden.

**Mr. Lamarque.** — Summary 8 merely says that it is possible to use — though this is not recommended — the train locomotives for certain special shunting operations of little importance. It is very valuable to be able to use a train locomotive at the end of its run for certain shunting operations. It is also economical. Personally, I think we should retain this summary.

**The President.** — Do you not think it might be mentioned in summary 6 without devoting a special summary to it. It seems to me that everyone agrees that the train locomotive is not suitable for shunting. Could we not say in summary 6 for example « Generally, train locomotives are not suitable for shunting ».

**Mr. Barrington-Ward.** — Mr. PRESIDENT, the point I wish to make most emphatically is that there is always a tendency in the marshalling yards to keep train engines standing about and not get them back to the Depot. I thought this was a good place to put that in.

**Mr. Vanderborght.** — I confirm my suggestion to suppress Summary 8. There are cases when the train locomotive may be used for certain operations. I do not see the need for this summary. We all know that in practice the train locomotive should be used for the train services and cannot be used for shunting except when it is impossible to do otherwise.

**The President.** — I suggest putting to the vote Mr. VANDERBORGHT's suggestion to suppress summary 8. The paragraph we are discussing at this moment is called « Shunting engines », and summary 6 states : « The shunting engines used in marshalling yards must be of a suitable type for the special work required of them ».

Are there any objections to suppressing Summary 8? As no one seems to want to make any comment, I conclude that we should suppress this Summary...

**Mr. Delacarte.** — Regretfully.

**The President.** — ... but opinions seem to be very divided.

**A Delegate.** — In Summary 6 after « suitable type » we might say « which train locomotives are not ».

**Several Delegates.** — No, No.

**Mr. Pickford,** *British Railways.* — Would not the position be met if we added this paragraph to Summary 6 and made it read « use of train locomotives for shunting is to be avoided except under special authorised local conditions. »

**Mr. Cirillo.** — I think we might retain the idea of suppressing Summary 8 but after the first sentence of Summary 6 add : « Train locomotives used for shunting can only be used for certain operations ».

**Mr. Lamarque.** — This is a different idea from the one we are discussing. If we wish to retain this idea, there would be no inconvenience in mentioning it in a special paragraph.

**Mr. Tribelhorn.** — I think we should retain the text given in the Report. This question is rather important for us. In Switzerland, we are obliged to use the train locomotives for shunting. It should be mentioned.

**The President.** — We are trying to find a formula which will express the idea better, but we do not seem to be succeeding.

**Mr. Tribelhorn.** — I suggest Summary 8 should be retained as worded by the Special Reporter.

**Mr. Marin.** — I think that the first suggestion simply to add the word « in general » would reconcile matters; we would say « The use of train locomotives for shunting is not to be recommended in general... ». But the summary should not be suppressed. It is very interesting, in certain cases, to be able to use the train locomotive for shunting. It should be taken as the criterion for using the locomotives.

**Mr. Vanderborght.** — That is why it is difficult to find a summary which will satisfy everyone.

**Mr. Marin.** — That is why I suggest adding « in general ».

**Mr. Parkhouse,** *British Railways.* — I think the point which is worrying some of us is that when a train engine arrives at its destination it should not be held up for purposes other than those for which it is essentially required and which necessitates its immediate return to the Depot. This is the point that we would like cleared up.

**Mr. Rostern.** — The use of train locomotives for shunting is not recommended, except in cases where there are certain operations to be performed of a very limited character, such as the transfer of special wagons where time is important and connections are involved. If you would accept this, I think we would reach agreement.

**The President.** — I would like to know if the majority of the Meeting is in favour of retaining Summary 8. If so, we can consider the possibility of modifying it slightly.

*— A vote being taken on show of hands, the majority were found to be in favour of retaining Summary 8.*

**The President.** — Mr. MARIN suggests merely adding the words « in general » to the Special Reporter's text; we would say : « The use of train locomotives for shunting is not to be recommended in general, except..., etc. ».

**Mr. Lamalle.** — « In general » or « in principle ».

**The President.** — Yes, « in principle » would be better.

**Mr. Marin.** — We might say : « In principle, the use of train locomotives..., etc. ».

**The President.** — In this way, we stress the idea that train locomotives are not suitable for shunting. I think that under these conditions we would all agree to adopt Summary 8 with this addition. This summary will therefore read as follows :

« 8. *In principle*, the use of train engines for shunting is not to be recommended except in the case of certain special operations of limited importance. »

*— Adopted.*

**Mr. Cirillo.** — *Summary 9 :*

9. The proper utilisation of the shunting engines, which is shown by the number of wagons shunted per hour, can lead to considerable economies; it must be followed

from day to day by the management of the yard and by the control post, dealt with under point 5, if there is one.

**Mr. Vanderborght.** — I suggest suppressing the last two words « if there is one ». If there is not one, there is no point in mentioning it.

**Mr. Rostern.** — I should like to make it clear, for the purpose of the British delegation, that the use of the words « control post » is an English translation. It is perhaps not the best term but has been adopted for want of a better one.

**The President.** — I suppose everyone agrees. If there is no control post, it is not possible for it to follow the operations. We can therefore suppress « if there is one ». *(Agreed.)*

*— Summary 9 was adopted, the words « if there is one » being deleted.*

**The President.** — We now come to Chapter II : *Efficiency of the special operations carried out in the yard.*

**Mr. Cirillo.** — *Summary 10 : Marking off.*

10. Most of the Administrations consulted consider that the marking off on arrival and departure is of special importance as regards the proper working of the yard, and care should be taken to see that this work is properly done. It appears advisable, whenever it is possible, to let the markers off prepare the shunting lists. Finally a certain amount of regulation of the work of the markers off may be useful in certain very large yards.

**Mr. Rostern.** — May I first of all say that the term « marking-off » is intended to refer to « numbertaking ».

**Mr. Vanderborght.** — We should have preferred a more concise wording. I suggest the following text : « Careful checking of wagons on arrival and departure has great advantages. It is also recommended that the numbertakers should also prepare the shunting lists ».

**The President.** — It is simply a question of the wording : that suggested by Mr. VANDERBORGHT is more concise than that of the Special Reporter.

**Mr. Lamarque.** — I do not see the object of leaving out that last sentence saying : « Finally certain regulations regarding the numbertaking should be useful in very large yards ».

**Mr. Vanderborght.** — This is included in the preparation of the harmonograms.

**Mr. Cirillo.** — That is true in Belgium, but not in all the other countries. We wanted to take into account the replies received from all the Administrations consulted.

**Mr. Barrington-Ward.** — Am I to take it that the word « marking-off » is going to be deleted, and the word « numbertaking » inserted. « Marking-off » is a different thing with us.

**The President.** — Mr. BARRINGTON-WARD's remark will be taken into account in the English text. Are we all agreed to adopt the text suggested by Mr. VANDERBORGHT, adding the last sentence of the Special Reporter's Summary ? (*Agreed.*)

*— The text adopted for Summary 10 is therefore as follows :*

« 10. *Numbertaking :* Careful checking of wagons on arrival and departure provides great advantages.

« It is also recommended that the numbertakers should prepare cut cards and shunting lists.

« Finally certain regulations regarding the numbertaking should be of great use in large yards. »

**Mr. Cirillo.** — *Summary 11 :*

*Inspection and repairs.*

11. In general it is as well to make a complete inspection of the wagons on the actual reception sidings so that damaged wagons can be sent direct to a special siding when they are shunted; the second inspection, which takes place before departure, will then rarely discover any wagons needing to be taken out.

In the large marshalling yards, certain marshalling sidings (the outer ones as a general rule) can be usefully allocated for very small repairs, so long as the essential safety precautions are taken.

**Mr. Barrington-Ward.** — I do not like those words « the second inspection, which takes place before departure, will then rarely discover any wagons needing to be taken out ». The majority of the damage and displacements take place in the marshalling yards, and I therefore suggest that these four lines be omitted.

**Mr. Rostern.** — The recommendation is that there should be an inspection on arrival and departure; by « inspection » we refer to wagon examination.

**Mr. Cirillo.** — Taking into account the spirit in which our enquiry was held and the replies received, we tried to stress the importance of carrying out inspection first of all in the reception sidings. The object of this inspection is to reduce to the minimum the damage revealed by the second inspection. Those who wish to alter this summary should take into account that we said the second inspection was not as important as the first seeing that it is made to ascertain if any damage has taken place in the yard. These are two different ideas, but they must remain linked together.

**Mr. Barrington-Ward.** — I do not agree because the damage takes place while they are being shunted.

**The President.** — It seems to me that the question can be summed up in the two following ideas : first of all, damage may be found during the second inspection which escaped notice at the first; this happens, it must be possible to avoid it. Finally, damage may be found to have occurred during shunting. It is not a question of inspection on the departure sidings, but immediately after shunting. This second inspection is important, as damage may occur during shunting. I think these are the two ideas expressed in the report.

**Mr. Watkins,** *British Railways.* — I suggest the following :

« A complete examination of the wagons on the actual reception sidings should be made so that the damaged wagons can be sent direct to the special repair sidings, a second check to take place before departure. »

**Mr. Lamarque.** — There are no great changes to be made to the French text. We might say : « the second inspection, before departure, will only reveal wagons damaged in the yard ».

**Mr. Rostern.** — The suggestion made by Mr. WATKINS is, in principle, what has been submitted in this report. They now prefer to say that the examination on the departure sidings is to detect wagons which have been damaged during shunting.

**The President.** — Yes, it may happen that wagons get damaged during shunting. Such wagons should be discovered before they leave. We agree in principle. It is merely a question of the wording.

**Mr. Lamarque.** — I prefer : « The second inspection, before departure, should then only reveal any wagons damaged in the yard ». By stating « should only reveal » it makes it clear that the first inspection should have discovered all the wagons damaged before being shunted. I would prefer « should only reveal » to any more positive statement.

**The President.** — I think everyone will agree with Mr. LAMARQUE. Consequently Summary 11 will be worded as follows :

« 11. *Wagon examination and repairs :* In general it is as well to make a complete examination of the wagons on the actual reception sidings so that damaged wagons can be sent direct to a special siding when they are shunted; the second check before departure is only to detect wagons which may have been damaged while in marshalling yards.

« In the large marshalling yards, certain sidings (the outer ones as a general rule) can be usefully allocated for very small repairs, provided that the essential safety precautions are taken. »

— *Adopted.*

**Mr. Cirillo.** — We now come to Summaries 12, 13 and 14 concerning *: Shunting :*

*Summary No. 12 :*

12. The speed of shunting depends upon the layout and the facilities provided, the prevailing weather conditions (and in some cases the composition of the train to be shunted).

These points being taken into account, the speed selected should be the maximum speed which allows the wagons to run into the marshalling sidings wtih the greatest regularity and the minimum of wrong shunts and overtakings.

**The President.** — Are there any comments ?

— *Adopted without comment.*

**Mr. Cirillo.** — *Summary 13 :*

13. The driver, the man in charge of the hump, the pointsmen and all the shunting staff should be in close communication with each other by visual and oral means, and also by telecommunications.

**The President.** — No remarks ?

— *Adopted.*

**Mr. Cirillo.** — *Summary 14 :*

14. The battle to prevent lost time and accidents is of the greatest importance from the point of view of the general output of the yard. In particular, care must be taken to

reduce to the minimum any interruptions to the shunting, in particular by taking steps to deal with the refuelling of the engines on site, the closing up of wagons on the sidings and the reduction of the number of wagons getting onto the wrong siding.

**Mr. Barrington-Ward.** — I do not like the word « battle ». I would prefer the word « necessity ».

**The President.** — I should like a concrete suggestion. What do you suggest Mr. Barrington-Ward?

**Mr. Voordecker.** — It is merely a question of the translation which will be settled afterwards. We take the remarks made into account.

**The President.** — The necessary alterations will be made to the English text. If there are no other remarks, we will consider the text suggested by the Special Reporter as adopted. (*Agreed.*)

**Mr. Cirillo.** — *Summary 15 : Braking and skid braking.*

15. Overtaking, rough shunts and damage must be reduced to the absolute minimum by suitable braking and skid braking methods.

In yards equipped with retarders the best solution is generally :

— on the one hand, to reduce the speed of the wagons by means of retarders;

— on the other hand, to stop them by means of hand operated skids in the siding, immediately behind and as near as possible to the last wagon shunted.

In yards not equipped with retarders the spacing of the wagons is generally carried out by special apparatus or hand operated skids, which are thrown clear of the rails; the wagons are stopped at the end of the siding by hand operated skids as in the previous case.

**Mr. Barrington-Ward.** — I do not agree with the last paragraph of this Summary, because it looks as if the general practice is for the spacing of the wagons to be generally assured by special apparatus or hand operated skids, and this is not a British practice. It is done by means of shunters running alongside the wagons and slowing them up by means of the side brakes.

**Mr. Cirillo.** — We put « in general » to cover the English solutions.

**Mr. Rostern.** — In general, we found that in dealing with these questions the British practice differed from the practice elsewhere because of the absence of side brakes, in other countries. I think you will agree that, generally, what is set out meets the case, because other countries are not dealing with loose couplings of the type in use in Great Britain.

**Mr. Moulart.** — We might add : « The use of retarders enables shunting to be appreciably speeded up and increases the capacity of the yard by about 50 % in the case of large yards ». The result is an appreciable improvement in the work of the yard.

**Mr. Lamarque.** — The Congress examines two different questions as far as marshalling yards are concerned. The first under « installations » is discussed by Section I. Here we are dealing with the second which is to ascertain the best way of making economies. I agree with Mr. Moulart's, observation. Retarders are advantageous, but this is the affair of Section I whereas in our Section we take it that such retarders are in use and our job is to find the best way of using them.

**Mr. Moulart.** — The object of Question VII is the output and control of the efficiency of marshalling yard installations, whereas under Question III the installations are being considered. Here, I appreciate the value of the retarder from the point of view of the output of the yard. For this reason my text is very short. I admit that the beginning can be left out, simply saying : .« Retarders make it possible to speed up the shunting very appreciably by increasing the output of the yard ».

**Mr. Cirillo.** — I think we should accept the first part of Mr. MOULART's suggestion. We might say in the summary : « The use of retarders makes it possible to speed up the shunting rhythm ». We cannot say that it speeds it up by as much as 50 %. We have no facts to support such a statement, which I do not think should be made here. Let us limit ourselves to saying that it makes it possible to speed up the shunting rhythm appreciably.

**The President.** — I agree that we should retain the first sentence : « The use of retarders makes it possible to speed up the shunting rhythm ». Mr. LAMARQUE's objection that it is a question of construction, not operating, is perhaps of value, but may I be permitted to point out that the operators are however well qualified to say which installations have resulted in good output. It is precisely those who make use of such installations who are qualified to say if they are useful or otherwise, if they do or do not increase the output. We can say that the value of retarders is very great, but I think it would be dangerous to quote any percentage. We should limit ourselves to affirming their usefulness.

**Mr. Watkins.** — I do not know what we will finally agree but it is not only the rail brakes that increase the speed of the shunting of the wagons. Rail brakes are only part of the feature and therefore to say « only the rail brakes » would not be correct.

**Mr. Marchand.** — *French National Railways* (in French). — From the point of view of the shunting rhythm, retarders are not the only thing to be considered; there is also automatic control of the switches. If retarders only were installed, I do not think the shunting capacity would be greatly increased. This is the conclusion of the Reporters of Question III.

**Mr. Moulart.** — When we say « makes it possible to increase the shunting rhythm », this implies that the other things which might contribute to increasing the speed have already been provided. The principle lies in the greater braking capacity that can be obtained thereby enabling the wagons to come down from the hump at a higher speed, as you have more power to stop them. Besides this, you have to have other installations, such as improvements to the lead in to groups of sidings, but this is additional. The essential principle, is the retarder I think.

**The President.** — I think this remark is to the point. Without doubt retarders are very useful to speed up the shunting

rhythm, but there are other factors, in particular mechanisation of the working of the switches and perhaps still other factors. Do you not think it would be useful to complete the sentence by stating : « The installation of retarders and mechanisation of marshalling yards in general is very useful... ».

**Mr. Moulart.** — That is not necessary.

**The President.** — « ... is very useful to speed up the shunting rhythm ».

**Mr. Lamarque.** — We are then falling into the question « Installations » which is the subject of Question III for the 1st Section.

**The President.** — I think we are perfectly well qualified to formulate a wish.

**Mr. Lamalle.** — I do not think we should abuse the words « in general » which gives us insipid summaries as is the way of the world. We must not forget that it is technician's summaries we should be drawing up. What we consider the best, that is what we should recommend.

**Mr. Cirillo.** — The words « in general » were used on account of the British Railways where different methods are employed.

**The President.** — I want you to agree whether we are to retain this phrase or not, and if needs be, whether we should complete it, since the operators can surely be permitted to express a wish

**Mr. Cirillo.** — This takes us a long way; other considerations might the included : the shape of the hump, for example, can also affect the speed and regularity of shunting. This also influences the output of the yard. We have to consider the most appropriate methods. When we state that retarders make it possible to speed up operations, it is very difficult to fix the limit for other installations.

**Mr. Marchand.** — Retarders make it possible to speed up operations on condition there are other installations enabling this fact to be profited by.

**The President.** — I must point out that it is not possible to design retarder installations without mechanised switch control equipment.

**Mr. Marchand.** — It is not possible.

**The President.** — I do not wish to influence the delegates' opinions. But may I point out to you that we are considering the improvement of the capacity of marshalling yards, it is not only a question of retarders.

**Mr. Goursat.** — Summary 15 is entitled : « Braking and skid braking ». Summary 12 says how the speed of shunting should be speeded up.

**The President.** — The wording of Summary 12 is very general. It states : « The speed of shunting depends on the installations, atmospherical conditions (and if needs be, the composition of the train to be shunted) ».

**Mr. Moulart.** — I should like an opinion to be expressed about retarders. Are

we in favour of retarders? I would like to see a statement to this effect.

**The President.** — What do you suggest?

**Mr. Moulart.** — I should like to know what the Delegates think about the first sentence : « The use of retarders makes it possible to increase the shunting capacity appreciably ».

**Mr. Cirillo.** — I do not know whether it is possible to express a general opinion about the usefulness of retarders, in view of the fact that the enquiry showed that most marshalling yards are not equipped with retarders.

**Mr. Moulart.** — I think that the delegates are able to give their opinion concerning installations which encourage the speeding up of the work.

**The President.** — Do you wish to confine yourself to the first sentence?

**Mr. Lamarque.** — That is the essential point.

**The President.** — It is incomplete if we mention nothing but retarders.

**Mr. Lamarque.** — It is retarders that make it possible.

**The President.** — Are you of the opinion that at the end of summary 15, before the last paragraph : « In yards not equipped with retarders... » that « the use of retarders makes it possible to speed up the shunting rhythm? ».

**Mr. Goursat.** — If it is question of speeding up the shunting, this should be mentioned in Summary 12. Here it is question of braking and skid braking.

**The President.** — In view of the difficulties we are encountering, I think perhaps no mention should be made of retarders nor of their possibilities. In Summary 12, we have already stated : « The speed of shunting depends on the installations, atmospheric conditions, etc... ». Here we are dealing with braking and skid braking. There is a definite affirmation as regards the advantages of mechanical braking. But if we do not mention the other installations, the matter will be incomplete. And if we do mention them, the text will be rather long.

If we wish to stress the advantages of retarder, it will be necessary to retain what was said in Summary 12, namely that all the installations are required to improve the shunting.

**Mr. Marchand.** — I suggest we do not add anything to Summary 15, but insert as a new summary after Summary 12 this sentence : « The use of retarders together with the mechanisation of the switches in particular, makes it possible to obtain a higher shunting rhythm ».

**Mr. Watkins.** — It is necessary also to have suitable gradients, as it is no good having railbrakes if the gradients are not right.

**Mr. Goursat.** — I thought the general opinion of the Meeting was that an opinion be expressed regarding retarders in marshalling yards. Section III does not deal with construction but with utilisation, and I think it would be of interest to make a recommendation.

**The President.** — It is a question of deciding whether we will let the matter drop or whether our Section wishes to make a recommendation concerning the importance operators attach in particular to the mechanisation of marshalling yards.

To solve the difficulty, I will put the matter to the vote.

Will those Delegates who desire an addition to be made to Summary 12 to stress the importance of mechanisation in order to speed up the marshalling, please raise their hands. *(The majority were against making such an addition.)*

**Mr. Vanderborght.** — We are discussing retarders not from the point of view of equipment, but from the point of view of output.

**Mr. Goursat.** — The question before us is the lowering of the cost per wagon shunted, the reduction of the cost of operation per wagon shunted. If we said : « All installations which make it possible to increase the number of wagons shunted lower the cost » and go on to say in a second sentence : « Retarders in particular are a good solution to the problem ». This will get us closer to the idea of trying to reduce the cost of marshalling yard installations.

**The President.** — If we mention shunting, it will have to be inserted at the end of Summary 12. We might say : « Installations which make it possible to increase the output at the hump encourage a reduction in the cost per wagon shunted. In particular retarders in the opinion of the majority of the Administrations consulted solve the problem ».

I would like to know if the Belgian Delegates agree to this?

**Mr. Vanderborght.** — We entirely agree with it.

**The President.** — It is a question of reducing the cost per wagon shunted.

It seems to me that a special paragraph between summaries 12 and 13 would be more in line with improving the shunting.

I think that we might agree to the introduction of this mention of the use of retarders for shunting.

**Mr. Holvid,** *Swedish State Railways.* — I do not think there is any doubt about the usefulness of mechanisation and the use of retarders. We are all agreed about the effectiveness of retarders. Therefore I am wondering whether it is necessary to state the fact as a summary reached at by the Congress.

**The President.** — It is in order to reinforce our opinion.

**Mr. Cirillo.** — In the summaries, there are other statements which express the opinion of the large Administrations. The suggestion might be accepted, but I should like to make a slight modification to it. I think, like you, that amongst the best installations, retarders should be mentioned. But I think it is inaccurate to say that only retarders will solve the problem of lowering the cost per wagon shunted.

**Mr. Moulart.** — They contribute thereto.

**The President.** — Everyone agrees, I think.

**Mr. Marin,** — I regret having to prolong the discussion, but I think that if we are going to talk about the shunting output, a special completely new chapter will have to be added. Before going on to speak about the speed, another summary will have to be inserted after Summary 12. Retarders and the mechanisation of the switches contribute to increasing the shunting speed, agreed, but I think that the shunting speed has nothing to do with mechanisation. In the case of mechanisation, the speed is still greater; but when there is no mechanisation the speed of shunting depends not only on the installations but also on atmospheric conditions and the quality of the staff. But these are quite distinct matters.

**The President.** — Mr. GOURSAT suggests drawing up a separate summary. On the other hand, we could satisfy Mr. MARIN by separating the speed of shunting from the output. The suggestion might be accepted and a new summary inserted between Summaries 12 and 13, a Summary 12*a* worded as follows :

« 12*a*. — Installations where the shunting output can be increased contribute to the reduction in cost per wagon shunted.

« The majority of Administrations are of the opinion that retarders are one of the best means to resolve this problem. »

Does everyone agree to this wording? *(Agreed.)*

I suggest we now go on to Summary 16, *Summary 15 being adopted in its original form.*

**Mr. Cirillo.** — *Train formation. — Summary 16 :*

16. A general preliminary programme for the making up of trains, adapted to day-to-day requirements, by the yard management, is extremely desirable.

**Mr. Marin.** — If you will allow me, I should like to say a few words about this question. I would like the Special Reporter to give a few explanations. He mentions a general preliminary programme for making up the trains. This programme has to be adapted daily to actual circumstances. There is a programme normally making provision for specialised trains for such and such a destination. This programme cannot be modified; it is based on the average daily number of wagons.

There is another programme drawn up in terms of the quantity of wagons over and above the average. This programme has to be prepared daily according to circumstances.

**Mr. Cirillo.** — The general programme is the fruit of experience, based on the average number of wagons and the most suitable hours for arriving at and leaving the marshalling yard. This programme should be adapted from day to day according to requirements and circumstances. That was what we wished to imply.

The general programme is drawn up; it is not always possible to realise it on account of altered circumstances; although it has been very carefully prepared, and based on very long experience, it has to be adapted to circumstances.

**Mr. Lamarque.** — Summary 16 covers both long distance through trains and stopping trains. A programme is regularly drawn up. The traffic requires a general programme to be prepared in advance, and according to circumstances certain trains are cancelled or added. The general programme is prepared in advance and makes it possible to draw up the marshalling programme from day to day.

**The President.** — I think that Summary 16 can be adopted in the form suggested by the Special Reporter. *(Agreed.)*

**Mr. Cirillo.** — *Summary 17 :*

17. In most of the countries consulted the making up of trains conveying traffic for more than one destination is left entirely to the yard staff. It is, however, desirable to organise this work on rational lines; with this object in view, some countries have already made use of « simultaneous making up » which saves about 50 % of the time previously required for this operation.

**Mr. Moulart.** — The making up of long distance trains is generally left to the initiative of the staff. Further on the text says : « with this object in view some countries have already made use of simultaneous making up which saves about 50 % of the time previously required for this operation ». We might say : « certain railways have already made use of simultaneous making up which saves..., etc. ». It comes to the same thing.

**Mr. Rostern** (replying to a demand of Mr. Barrington-Ward). — « Multiple-lot trains » refer to those trains which are carrying traffic for several destinations.

**Mr. Goursat.** — All the railways should agree.

**Mr. Lamarque.** — By saying « certain railways » the importance of the matter is lessened. It seems that all the railways are agreed that the making up should be done rationally.

**The President.** — The suggested text meets this requirement. It says : « It is however desirable to organise this work on rational lines; with this object in view some countries have already made use of simultaneous making up which saves 50 % of the time previously required for this operation ». Are you sure about this percentage?

**Mr. Lamarque.** — I think that simultaneous making up has only been tried in two countries, Belgium and France. It was found that the saving was considerable, and the figure of 50 % is in no way exaggerated. I have tried the method myself and found it completely satisfactory. In Belgium also excellent results have been obtained.

**Mr. Vanderborght.** — When 4 or 5 trains are made up simultaneously, the saving is more than 50 %.

**The President.** — We can therefore take the figure as correct.

**Mr. Lamarque.** — If you prefer we could say : « of the order of 50 % or thereabouts ».

**The President.** — I should like to know if there are any other comments? Are we all agreed to adopt Summary 17 as presented by the Special Reporter?

— *Summary 17 was adopted without modification.*

**Mr. Rostern.** — We have not had any experience of this simultaneous making up of trains.

**Mr. Lamarque.** — Some countries have already written to me to ask what this simultaneous making up is. I have prepared a detailed note about it. If any delegates are interested, I shall be very pleased to help them.

**The President.** — I thank Mr. LAMARQUE in the name of the Delegates. I propose to adjourn the meeting and postpone the discussions on the remaining summaries for Question VII till to-morrow.

— The Meeting ajourned at 12.15 p.m.

## Meeting of the 27th September 1950.

PRESIDENT : DR. G. C. PALMIERI, ENGINEER.

— The Meeting began at 9.15 a.m.

**The President.** — Gentlemen, I invite you to resume the discussions on the summaries for Question VII, which we could not complete yesterday. We got to *Chapter III : Economies to be made when the number of wagons to be dealt with is less than the full capacity of the marshalling yard.*

**Mr. Cirillo.** — *Summary 18 : Weekly reduction in the traffic.*

18. A weekly reduction in the activity of marshalling yards at the beginning of the week can as a rule be accompanied by important economies obtained by closing down for 24 hours at the most the two shunting and making up yards, the start and end of the shunting down being staggered by a few hours from one yard to the other. As such a measure always involves an increase in the transit time, it is necessary for each Administration to weigh carefully the needs of rapid transit against the necessity for making economies.

**The President.** — Any remarks about Summary 18?

**Mr. Moulart.** — Is not there a mistake. It says : « ... a temporary closing of 24 hours *at the most...* » Should not it be « *or more* ».

**Mr. Marchand.** — No, the Reporters intended to say « *at the most* ».

**The President.** — This is the maximum. You do not insist upon it?

**Mr. Moulart.** — No, it was simply a remark.

**Mr. Vanderborght.** — Is the expression « as a rule » justified?

**Mr. Cirillo.** — By saying « as a rule » we intended to take into account the opinion of most of the Administrations.

**Mr. Vanderborght.** — Are there not some railways where the closing down

of part of the yard will not give any savings?

**Mr. Cirillo.** — I think that on most railways closing down a marshalling yard for 24 hours will result in savings. In principle, this is not the point. Mr. Vanderborght is no doubt of the opinion that all the railways are not in a position to do this. For example we have some traffic from Sicily which has to travel a very long way before arriving at the marshalling yard. If the yards are closed down one day of the week, this will lead to a delay in sending on the wagons. Closing down is an economic method..., when it can be applied. Certain Administrations do it, but there are others who cannot do it. That was why we said « as a rule ».

**Mr. Rostern.** — I would like to make it clear to the English delegation that this particular paragraph refers, in principle, to those yards which are open continuously and it was felt that those yards ought not to be closed for a period longer than 24 hours on account of traffic dislocation.

I think, Mr. President, because of that it would be an improvement in the wording of this paragraph if it could be made to read that « a weekly reduction in the activity of marshalling yards, which are open continuously, would obtain ».

**Mr. Barrington-Ward.** — May I ask if this is proposed to be a long term policy or a short term policy? If it is a short term policy you are at once going to be in trouble with your men owing to the 44-48 hour week.

**The President.** — Mr. Vanderborght do you suggest leaving out the words « as a rule » or do you agree that they should be retained?

**Mr. Vanderborght.** — I will not insist on the point; the text can be retained as it is.

**The President.** — As no other remarks are being put forward, we will keep the text as the Special Reporter gave it.

— *Summary 18 was adopted as follows:*

18. *Temporary reductions in traffic.*

« Temporary reductions in the movement of traffic through marshalling yards which are normally open continuously can, as a rule, be accompanied by important economies following the closure of the sorting and formation sidings for not more than 24 hours at the beginning of the week, the periods of closure being staggered to provide a few hours overlap. »

**Mr. Cirillo.** — *Summary 19 :*

*Permanent reduction in the traffic.*

19. If there is a permanent falling off in traffic, the necessary economies can be obtained either by reducing the shunting capacity by means of a decrease in the number of men and shunting engines employed, or by closing one or more parts of the yard for one shift per day or even two in exceptional cases. If the decline is maintained or the traffic continues to fall, it becomes necessary to reconsider the whole problem in the light of traffic requirements in order to determine the purpose which the yards should serve in the general plan and traffic movement.

**The President.** — No remarks?

— *Summary 19 was adopted without modification.*

**Mr. Cirillo.** — We now come to *Chapter IV : Staff.*

*Summary No. 20 :*

*Training and selection of staff.*

20. The high output of marshalling yards depends to a very large extent on the professional skill and efficient work of the men employed there.

For this reason extensive professional instruction and the careful selection of certain specialised staff, in particular the skid brakesmen, has given excellent results, wherever it has been introduced.

**Mr. Lamalle.** — As regards the staff, I think that in most countries, the shunting staff of marshalling yards comes from the country. This is a class of workmen who are not very suitable for anything but shunting. Consequently they are relatively badly paid. I think all the same there is some interest in keeping them by one means or another. I do not want any alteration to be made to the summary, but I think the observation should be made.

**The President.** — I think I can call Mr. LAMALLE's attention to Summary 21 which says : « It appears advisable to interest the shunters in the output of work by introducing premiums, varying from day to day if possible, according to the quality of the work, etc. ».

This is intended to interest the staff. I do not know if this is what Mr. LAMALLE means.

**Mr. Vanderborght.** — I suggest making an addition to the second sentence. In the first sentence it says : « The high output or marshalling yards depends to a very large extent on the professional skill and efficient work of the men employed there. » I think it should be stated that the output of a shunting yard depends necessarily on certain specialist staff, particularly in the case of skid braking, as the second paragraph states, « for this reason extensive professional instruction and the careful selection of certain specialised staff, in particular the skid brakesmen, has given excellent results wherever it has been introduced ». But there is another category of staff playing a very important part : the managerial staff. All the preliminary work is done by the managerial staff; the others carry it out. I would like added : « of the managerial and certain specialised staff ». This is extremely important in the case of large shunting yards.

**Mr. Cirillo.** — I agree with what Mr. VANDERBORGHT has just said. In the report the importance of the managerial and shunting staff was stressed. We might add a word here about the managerial staff, but, I repeat, we have already stressed the point in the report.

**The President.** — It is not contradicted in the report, and Mr. VANDERBORGHT's idea should be retained.

**Mr. Lamarque.** — I also agree with Mr. VANDERBORGHT's remark, and I think the idea might be expressed in the first paragraph by saying : « ... the professional skill of the managerial and executive staff employed there ».

**Mr. Barrington-Ward.** — I would suggest that we leave it as it is with just a few words as regards the management. To emphasise this as regards to the men will not apply in England, for instance.

**Mr. Rostern.** — Can I make it clear to Mr. Barrington-Ward that the intention is merely to make reference to the word « management ». The understanding is that the yardmasters and principal assistants are in charge and it is not intended to be the management above yard level.

**The President.** — I do not see the reason for the alteration.

**Mr. Barrington-Ward.** — What I require is to leave this paragraph as it is, but I would like to put something in in regard to supervision. We have got to have good supervision; that is the only alteration I should make.

**Mr. Cirillo.** — I do not think it is necessary. I would remind you that in my report under point 5 concerning « the importance of the part played by the staff in the output of marshalling yards » I said : « An analysis of the operations carried out in marshalling yards has shown the great importance, as regards the output of the yard, of the initiative and professional skill of the staff employed in the different parts of the yard.

« From the management to the carrying out of the work, there must be the same good will, the same intelligent activity presiding over the different operations, in order to harmonise the work and obtain the maximum results from the available resources...

« For this reason every care should be exercised in selecting the staff of marshalling yards, the human element being the foremost factor affecting the output. »

So we have already said a great deal about the staff. We have stressed the fact that it is impossible to separate the management from the execution. Efficient management is necessary because the specialised staff cannot carry out the work in the most efficient manner without efficient control.

I think it is impossible to separate this whole. There are several different kinds of specialised staff working in the marshalling yard all with the same object. To my mind, it is impossible to separate the management from the executives. These matters must be properly harmonised. For this reason I consider the addition suggested by Mr. Lamarque agrees more with what I think, and I am of the opinion that there is no point in making a distinction between the different kinds of employees who are all co-operating towards the same ends, some giving orders and others carrying them out.

**Mr. Barrigton-Ward.** — The success of the working of the yard must depend upon the supervision. I would suggest that it requires special mention.

**Mr. Allen,** *British Railways.* — I would like to point out that this section deals with training and selection of staff and, in so doing, it refers to the ordinary ground staff and not the administrative people. The second part of Summary 20 deals particularly with skid brakesmen. It would seem, therefore, that the desire here is to direct attention to the desirability of training and the selection of suitable personnel. To that extent, one wonders whether it has been tried and if so, has it been successful. I suggest that we should keep Summary 20 as it is and insert a separate paragraph.

**Mr. Rostern.** — Mr. ALLEN, Mr. BARRINGTON-WARD, may I put it that the suggestion put forward by Mr. LAMARQUE would, I think, adequately cover what is wanted. The suggestion is that we should introduce in summary 20 the words « professional skill and efficient work of the staff employed there, including supervision ». That was the suggestion originally intended.

**Mr. Cirillo.** — I think everyone might agree to the following suggestion : we will not insert anything in the text about the managerial staff but add a third paragraph at the end stating : « Careful selection of the supervisory staff is also essential ».

**The President,** — I approve the Special Reporter's suggestion, and I think everyone will agree to it. *(Agreed.)* Consequently Summary 20 is adopted in the following amended form :

« 20. *Training and selection of staff.*

« The high output of marshalling yards depends to a very large extent on the professional skill and efficient work of the staff employed.

« For this reason extensive professional instruction and the careful selection of certain specialised staff, in particular the skid brakesmen, has been found to give excellent results wherever it has been introduced.

« Careful selection of the supervisory staff is also necessary. »

We will now go on to Summary 21.

**M. Cirillo.** — *Summary 21. Output premiums.*

21. It appears advisable to interest the shunters in the output of work by introducing premiums, varying from day to day if possible, according to the quality of the work (less damage, delays, etc.) and the actual output obtained (number of men, shunting engine hours per wagon dealt with, etc.).

**Mr. Allen.** — I want to suggest that Summary 21 be deleted. The suggestion contained herein is open to a great deal of criticism. In the first place you cannot begin to examine the introduction of a programme for increased output, applicable to the shunting staff only, in any marshalling yard that is of a reasonable size. It would, in any event, involve other grades in many cases, enginemen for instance, no matter what type of system was introduced. In many places, it would involve certain signalmen where points are controlled by them, and also the moving in and out of the yard of the trainmen, including the enginemen and the guard. Therefore, the introduction of a bonus system for shunters only could not be considered since all the yard staff (pointsmen, train drivers, etc.) are also associated with the efficient working of the yard. I think that one has to bear in mind that Summary 20 suggests that we should have appropriate staff trained and selected for the work, and it is implied that where we have extensive training this has been found useful. If it is decided to introduce schemes of appropriate training and appropriate selection of the men concerned, one ought to be able to feel that the staff so selected and so trained should be able to do shunting work to the advantage of the undertaking, no matter whether it might be in addition to that which the men could look upon as normal working and we should not rely on a

system of incentive bonuses. Such bonus systems may work well in large factories where all the staff each have a direct interest in production, but this is not the case so far as marshalling yards are concerned. I move that the paragraph be deleted.

**Mr. Lamalle.** — For my part I think Summary 21 is very well worded. The premiums in question reward the worker for his output, but there is another point. The shunters have to work in all sorts of weather, rain, snow, fog; they are very exposed; owing to the noise they cannot hear the trains coming up. In my opinion, the premiums should be sufficiently high to compensate them to some extent for the risks they run. There is the social side of the question. They must not be overpaid, but the premiums must be sufficiently high, and I am of the opinion that we should add the word « considerable » before the word premiums, so that the summary will read : « ... by introducing considerable premiums... ».

**Mr. Cirillo.** — The point of view expressed by the British delegates on the subject of premiums has not escaped my notice. We studied the question before considering it in our report. It is a very interesting subject and I may tell you as President of the Sub-Committee of the International Railway Union, which has studied this question, that we have come across two different points of view : some Administrations, in particular the British Railways, do not consider it necessary to encourage the output of the men, not only in the marshalling yards but other yards, by means of premiums. Premium systems with different bases of application have already been applied in France and Belgium, etc., but they are founded on the same principle : the output premium is intended to encourage the men to pay greater attention to the way they carry out their work.

It cannot be stated categorically that the introduction of premiums is to be recommended if some Administrations are not of this opinion. But most of the Administrations are satisfied with the system. Other railways are now trying out the system and think it is advantageous to them.

It is not a question of giving an additional wage, but only a small part of the wage, linked up with the principle of the savings that will be realised. The premiums represent in fact a percentage of the savings realised.

Should they be granted to all the yard employees? This is another question; here we are dealing with the shunters.

The principle of premiums has been adopted by some Administrations, and others are going to adopt it. We can therefore say « in general » to leave the door open for those who do not hold such an opinion.

**Mr. Lamarque.** — I would like to support Mr. Cirillo's suggestion. The question here is to find some way of making economies in marshalling yards. Now human nature being what it is wherever premiums have been introduced there has been an increase in the output. The English say it is not possible. My answer to this is that it is already done in France, Belgium and that the question is under consideration in Italy.

In actual fact the text says « shunters ». In France and Belgium the premium is granted to all the men working in the marshalling yard. We might say : « It appears advisable to interest the men working in... ».

As far as I am concerned, I would leave out the words « in general ». Experience has proved that economies could be made; this is the experience of France and Belgium. Instead of the « shunters » I would prefer « men working in the marshalling yards ».

**Mr. Rostern.** — I would like to point out that the translation is not quite as it should be and the intention is to interest not only the shunters, Mr. ALLEN, but to interest the whole of the yard staff. This translation is not quite right and it will be corrected when it is published, but I would like to say that all the British Regions who were consulted reported that they had not had any experience of bonus systems in marshalling yards. On the other hand, certain continental countries do report that this has been tried out very successfully, and I think it is answering again points which Mr. ALLEN has made when I say that they provide a bonus for everyone engaged in the yard, from the yardmaster down to the lowest paid member of it. It includes the foremen, pointsmen and everybody, and under these circumstances I wonder whether it would be satisfactory in order to reach a compromise if we had this paragraph amended to show that « *in certain countries* it has been found advisable » rather than read it in the text as printed.

**Mr. Blee,** *British Railways.* — With the amendments which have been suggested by Mr. ROSTERN and the interpretation which has been placed upon the reference to the shunting staff, one can hardly now take exception to it; since we shall be discussing this in another paper I feel that this should be left out. I do not see how it is possible to estimate for certain the reduction in the number of damaged wagons. For this reason I cannot lend my support to all you have said but if the paragraph could be amended to read « from experience in other countries », it is difficult for an Englishman to argue.

**Mr. Cirillo.** — I think that « some countries » does not agree with the spirit of the report, the replies received. If for the time being only some countries have adopted the premium system, most of the Administrations consulted expressed a favourable opinion of premiums. I would like to use a phrase more appropriate to the results of our enquiry. If we said : « Most countries are of the opinion that it is advisable to interest the staff of marshalling yards (instead of shunters) in the output... etc. ».

**Mr. Barrington-Ward.** — May I suggest Summary 21 should read « In some countries ».

**Mr. Pickford.** — May I suggest this wording :

« In some countries, increased output of work in marshalling yards has been obtained by the introduction of premiums but the institution of such schemes must necessarily depend on general policy and local working conditions. »

**Mr. Rostern.** — Answering Mr. BLEE, I think there may have been perhaps again

a little misunderstanding arising out of the translation but the schemes which are operating on the continent cover the whole of the yard staff, and the reference to damage and delays means that the staff have their bonuses reduced in cases where this occurs. I do not know whether that was quite clear in the translation.

**Mr. Lamarque.** — Belgium and France apply very similar formulae. Two factors are taken into account in France in drawing up the premiums; the number of men compared with the number of wagons shunted and the shunting engine hours compared with the number of wagons shunted. There are also factors which will reduce the amount of the premium : damages and delays for which the yard is to blame. Each yard is advised of damage and delays occurring from day to day, for which it is held responsible. The premium is divided up between all the men, according to their grade, the managerial staff, in particular, getting more than the other men. In France, the yard master gets a premium; in Belgium he gets no share but the other officials are paid.

**Mr. Blee.** — Answering the last two points, the difficulty is to measure where the damage rests in any yard and the extent of it. One can understand the damage to wagons, but how can damage inside the wagons be recorded on a particular day?

**Mr. Lamarque.** — It is only damages seen from outside.

**The President.** — It seems to me that we must arrive at some conclusion. We cannot go on with the discussions for ever. We must get the opinion of the majority of the Administrations. We cannot discuss the way the premiums are to be allocated.

I think in order to settle the question, we could adopt Mr. Lamarque's suggestion and say : « Most Administrations consulted are of the opinion that it is advisable to interest the staff responsible for the output... ».

Certain Administrations think that the premium system is not a useful measure. This means that there are Administrations who do not think that premiums should be granted. The opinion given in the summary refers to certain Administrations and not to all of them.

No one is bound in any way by the suggested wording.

I should like to know the opinion of the Meeting on this suggestion. So I will ask you to vote on the addition I have just read. Instead of « It appears advisable to interest the shunters... » we would say : « Most Administrations consulted are of the opinion that it is advisable to interest the men employed in marshalling yards... »

Will Delegates please raise their hands if they agree.

**Mr. Lamarque.** — You are going to retain « that it is advisable »?

*— The result of the vote is 11 in favour and 9 against.*

**Mr. Blee.** — I suggest Mr. President that the results of this vote being given in the report of the proceedings.

**Mr. Cirillo.** — Taking the first part suggested as adopted, I am of the opinion,

if you agree, that we should add « Other Administrations on the contrary are not considering introducing such premiums ».

**The President.** — I do not see any difficulty in adopting such a summary.

**Mr. Watkins.** — I am afraid I do not agree such incentives are necessary or desirable to achieve economical working.

**Mr. Lamarque.** — As this measure has not been tried on the British Railways, it would be difficult for its representatives to form any judgment about it.

**Mr. Allen.** — I think your own suggestion carries it a little too far. Would this form be acceptable :

« Certain Administrations have found it advisable to interest the staff employed in shunting yards in the output work by the introduction of a premium payment according to the quality of work and output obtained. »

**The President.** — Are there any difficulties against adopting it?

**Mr. Lamarque.** — Can I insist on my point. You put the matter to the vote and the decision taken must be respected. The text must be retained. If you like, we can add that the British delegates are against it.

**The President.** — No, no, I do not want to do so.

**Mr. Allen.** — The suggested alteration does not take us very much further to unanimity and I would ask you to accept the words I have offered.

**Mr. Holvid.** — If only two or three Administrations have applied this premium system, M. ALLEN's text would be correct, but on the other hand some of the other Administrations consulted are on the point of introducing this method, and consequently the wording suggested by Mr. LAMARQUE is correct.

**Mr. Cirillo.** — I would like to throw some light on the debate. The suggestion : « Most of the Administrations consulted are of the opinion that it is advisable... » can be accepted. It might be added that other Administrations, especially Poland, Czechoslovakia, the Spanish Railways, have already adopted a premium system. But they are still in the minority. The minority of Administrations agree that it is advisable to adopt the premium method. A text of this sort takes into account the reservations made by the British Railways who do not share this opinion.

**Mr. Barrington-Ward.** — Is not the real difficulty in regard to this that it depends upon the relationship between the staff and the Administrations of the Unions. I still think that this, in order not to create difficulties elsewhere, should be kept out.

**The President.** — The object of the premium is to increase the output of marshalling yards.

**Mr. Holvid.** — I would like to point out that it is possible to give the paragraph a wider sense by dealing with it as part of the wages of the shunters. Everyone will agree that work in marshalling yards

is rather hard and must be rewarded. In Sweden, we give a fixed wage per working day. It might be said that other countries have found it advisable to add an output premium to the wage because this output premium is not intended to increase the wages but is a reward for the work which is very hard.

**Mr. Tribelhorn.** — That is a mistake.

**Mr. Moulart.** — In view of the remarks made, the text might be worded in this way : « Some railways have successfully introduced premiums based on the output and quality of the work. Most Administrations are in favour of this method ». This is saying that some railways have introduced them and others are in favour of them.

**Mr. Tribelhorn.** — « Some » is restrictive, we should say : « Several railways have... ».

**Mr. Lamarque.** — Mr. Moulart's text does not include the expression « premiums varying according to the quality of the work ».

**Mr. Moulart.** — We could say : « taking into account the daily output and quality of the work ».

**The President.** — We will therefore adopt the text suggested by Mr. Moulart, adding the word « daily ».

**Mr. Barrington-Ward.** — For the British delegation if it is a question of fact, we can only accept it.

**The President.** — Summary 21 will therefore read as follows :

« Some railways have adopted with success systems of incentive bonuses, which take into account the output and quality of the day's work.

« The majority of Administrations are in favour of this idea. »

— *Adopted.*

We can now go on to *Chapter V : Comparison and general control of the results obtained.*

**Mr. Cirillo.** — *Summary 22 : Output factors for the yard and their comparison.*

22. The factors most likely to give a measure of the output of a marshalling yard are :

— the average time elapsing between the arrival of a wagon in the yard and the time it is ready to leave;

— the number of wagons shunted per shunting engine hour;

— the total number of men employed in the yard compared with the number of wagons dealt with.

But these different factors are hard to compare as between one yard and another, and really are only useful for making a comparison between the output of the same yard at different periods.

**Mr. Vanderborght.** — One very important factor should be mentioned in the summary. The percentage of wagons damaged compared with the number of wagons shunted should be added.

The output is a matter of quantity and of quality. The number of wagons shunted per day is the quantity. The time the wagons remain in the yard, the number of wagons damaged, is the quality of

the work; this affects the cost per wagon shunted.

We could add a fourth point : « The percentage of wagons damaged per thousand wagons shunted ».

**Mr. Holvid.** — I wonder if the average time between the arrival of the wagon and its departure is a sufficient factor for measuring the output of marshalling yards. This average time depends upon the train timetables.

We get average times of between 4 1/2 and 12 hours. This has nothing to do with the output of the yard. Instead of the average time, it would be better to mention the number of wagons shunted per day compared with the yard installations.

**Mr. Lamarque.** — I think our Swedish colleague has reason. I suggest saying : « the average time which elapses between the arrival of the wagon in the yard and the time this wagon is ready for the first train leaving it ». This depends on the quality of the work in the yard. The time the wagon remains in the yard may be as much as 15 hours, but this is of no importance if there is only one train every 24 hours. As soon as the wagon is ready to leave by the first train, that is all that matters. What we want to know is the time between the arrival of the wagon and when it is ready to leave by the next train.

**Mr. Lamalle.** — I think the text is all right seeing that the question of timetables is independent of the output of the yard. To appreciate the output, we want to know the time when the wagon is ready to leave.

**Mr. Lamarque.** — « ... the moment this wagon is ready to leave » instead of « is ready to leave the yard ».

**The President.** — The text will be « The average time elapsing between the arrival of a wagon in the yard and the time it is ready to leave ».

**Mr. Lamarque.** — Does our Swedish colleague agree?

**Mr. Holvid.** — Yes.

**The President.** — We are therefore agreed to adopt Summary 22 with the modifications suggested first of all by Mr. VANDERBORGHT and then by Messrs. HOLVID and LAMARQUE. It will therefore read as follows :

« 22. *Factors influencing the output of the yards and comparative results.*

« The factors most likely to give a measure of the output of a marshalling yard are;

« *a)* the average time elapsing between the arrival of a wagon in the yard and the time it is ready to leave;

« *b)* the number of wagons shunted per shunting engine hour;

« *c)* the total number of men employed in the yard compared with the number of wagons dealt with;

« *d)* percentage of wagons damaged in relation to wagons shunted.

« It is, however, difficult to draw comparison between one yard and another and these factors are, therefore, only really useful for the purpose of comparison between the output of the same yard at different periods. »

— *Adopted.*

**Mr. Cirillo.** — *Summary 23 : General control of the results obtained :*

23. Effective and constant control of the work must be maintained at all levels in order to keep up the efficiency of the yard in all its phases.

This control, which is based on the appropriate documents and statistics, must above all make it possible to adapt the different resources of the yard and the train services to the actual traffic requirements.

**The President.** — No comments?

*— Summary 23 was adopted without comment.*

*— The Section then went on to discuss Question IX, the examination of Question VIII being put off until Monday October 2nd.*

# DISCUSSION AT THE PLENARY MEETING.

## Meeting held on September 29th, 1950.

Dr. Eng. G. di Raimondo, President, in the Chair.
General Secretaries : Mr. P. Ghilain and Dr. Eng. M. Valdivieso.
Assistant General Secretary : Mr. Ch. E. Whitworth.

**Mr. Ghilain,** *General Secretary* (in French). — We will now examine the Summaries relating to Question VII which were published in the *Daily Journal of the Congress*, No. 2 of the 27th September 1950 and No. 3 dated 28th September 1950.

*(No objections were raised during the examination of these Summaries.)*

**The President.** — We may therefore consider the Summaries for Question VII as adopted.

### SUMMARIES.

#### I. General output of the yard.

*1. Labelling wagons.*

« The use by the sending station of « coded wagon labels showing the destination station and legible at a distance « facilitates, on railways of some importance or with numerous lines, the work « of the yard staff and reduces the risk « of wagons going astray.

*2. Notification.*

« Preliminary notification of certain « details of the composition of incoming trains enables the yard better to « estimate and organise its work.

*3. Timetables.*

« Though the timetables must be fixed « first of all in such a way as to ensure « the best forwarding arrangement for « the wagons and most satisfactory services, they must also as far as possible « take into consideration the maximum « output of the yard, especially when « there are insufficient reception or « departure sidings.

*4. Allocation of sidings.*

« Careful allocation of the marshalling sidings, based upon the layout of « the yard and the kinds of trains to be « made up with the wagons shunted, has « produced good results on the turnover of the yard.

*5. Co-ordination and control of the operations of the yard. Use of equipment according to requirements.*

« Co-ordination of the different operations carried out in the yard is « essential for good output.

« This is assured in the first place by

« the preparation of preliminary working « programmes or harmonograms show- « ing the way the different engines and « gangs of the various parts of the yard « are to be used in each shift.

« These programmes will particularly « provide for the carrying out of certain « preliminary operations to be done at « the same time and which are required « for shunting.

« At the same time, the concentration « of all useful data in the hands of « the yardmaster with the necessary « extensive telephonic communications « throughout the yard makes it possible « to carry out the programme to the « best possible extent.

« In order to carry out these meas- « ures, a « control post » appears to be « very desirable in large marshalling « yards, especially if these have several « independent yards.

*Shunting engines.*

« 6. The shunting engines used in « marshalling yards must be of a suit- « able type for the special work required « of them. The Diesel engine has prov- « ed its worth wherever it has been used, « from the point of view of having a « higher output and greater flexibility « than the steam locomotive.

« 7. In the case of steam locomotives, « it is necessary to take special steps to « minimise interruptions due to the « need to refuel or for maintenance « purposes. In almost every case it is « of value to install a fuelling point in « the yard where water and coal can be « taken.

« 8. In principle the use of train « engines for shunting is not to be « recommended except in the case of « certain special operations of limited « importance.

« 9. The proper use of shunting « engines which is shown by the number « of wagons shunted per hour can lead « to considerable economies; it must be « watched from day to day by the « management of the yard and by the « « control post » dealt with under « summary No. 5.

## II. Efficiency of the special operations carried out in the yard.

10. *Numbertaking.*

« Careful checking of wagons on « arrival and departure provides great « advantages. It is also recommended « that the numbertakers should prepare « cut cards and shunting lists. Finally, « certain regulations regarding the num- « bertaking should be of great use in « large yards.

11. *Wagon examination and repairs.*

« In general it is as well to make a « complete examination of the wagons « on the actual reception sidings so that « damaged wagons can be sent direct « to a special siding when they are « shunted; the second check before « departure is only to detect wagons « which may have been damaged while « in marshalling yards.

« In the large marshalling yards, cer- « tain sidings (the outer ones as a « general rule) can be usefully allocated « for very small repairs, provided that

« the essential safety precautions are « taken.

*Shunting.*

« 12. The speed of shunting depends « upon the layout and the facilities pro- « vided, the prevailing weather condi- « tions (and in some cases the compo- « sition of the train to be shunted). « These points being taken into account, « the speed selected should be the maxi- « mum speed which allows the wagons « to run into the marshalling sidings « with the greatest regularity and the « minimum of wrong shunts and over- « takings.

« 12 *a*). Installations where the shunt- « ing output can be increased contribute « to the reduction in cost per wagon « shunted. The majority of administra- « tions are of the opinion that retarders « are one of the best means to resolve « this problem.

« 13. The driver, the man in charge « of the hump, the pointsmen and all « the shunting staff should be in close « communication with each other by « visual and oral means, and also by « telecommunications.

« 14. The prevention of lost time and « accidents is of the greatest importance « from the point of view of the general « output of the yard. In particular, « care must be taken to reduce to the « minimum any interruptions to the « shunting, specially, by taking steps to « deal with the refuelling of the engines « on the site, the closing up of wagons « in the sidings and the reduction in the « numbers of wrong shunts.

15. *Braking and skid braking.*

« Overtaking, rough shunts and « damage must be reduced to the abso- « lute minimum by suitable braking and « skid braking methods.

« In yards equipped with retarders the « best solution is generally :

« on the one hand, to reduce the « speed of the wagons by means of retar- « ders;

« on the other hand, to stop them « by means of hand operated skids in « the siding, immediately behind and as « near as possible to the last wagon « shunted.

« In yards not equipped with retarders « the spacing of the wagons is generally « carried out by special apparatus or « hand operated skids, which are thrown « clear of the rails; the wagons are stop- « ped at the end of the siding by hand « operated skids as in the previous case.

*Train formations.*

« 16. A general preliminary pro- « gramme for the making up of trains, « adapted to day-to-day requirements, « by the yard management, is extremely « desirable.

« 17. In most of the countries con- « sulted the making up of trains con- « veying traffic for more than one desti- « nation is left entirely to the yard staff. « It is, however, desirable to organise « this work on rational lines; with this « object in view, some countries have « already made use of « simultaneous « making up » which saves about 50 % « of the time previously required for this « operation.

## III. Economies to be made when the number of wagons to be dealt with is less than the full capacity of the marshalling yards.

18. *Temporary reductions in traffic.*

« Temporary reductions in the move-
« ment of traffic through marshalling
« yards which are normally open con-
« tinuously can, as a rule, be accom-
« panied by important economies fol-
« lowing the closure of the sorting and
« formation sidings for not more than
« 24 h. at the beginning of the week,
« the periods of closure being staggered
« to provide a few hours overlap.

19. *Permanent reduction in the traffic.*

« If there is a permanent falling off
« in traffic, the necessary economies can
« be obtained either by reducing the
« shunting capacity by means of a
« decrease in the number of men and
« shunting engines employed, or by clos-
« ing one or more parts of the yard for
« one shift per day or even two in
« exceptional cases. If the decline is
« maintained or the traffic continues to
« fall, it becomes necessary to recon-
« sider the whole problem in the light
« of traffic requirements in order to
« determine the purpose which the yards
« should serve in the general plan and
« traffic movement.

## IV. Staff.

20. *Training and selection of staff.*

« The high output of marshalling
« yards depends to a very large extent
« on the professional skill and efficient
« work of the staff employed.

« For this reason extensive profes-
« sional instruction and the careful
« selection of certain specialised staff,
« in particular the skid brakesmen, has
« been found to give excellent results
« wherever it has been introduced.

« Careful selection of the supervisory
« staff is also necessary.

21. *Output premiums.*

« Some railways have adopted with
« success systems of incentive bonuses
« which take into account the out-
« put and quality of the day's work.

« The majority of the Administrations
« are in favour of this idea.

## V. Comparison and general control of the results obtained.

22. *Factors influencing the output of the yards and comparative results.*

« The factors most likely to give a
« measure of the output of a marshal-
« ling yard are :

« *a*) the average time elapsing be-
« tween the arrival of a wagon in the
« yard and the time it is ready to leave;

« *b*) the number of wagons shunted
« per shunting engine hour;

« *c*) the total number of men employ-
« ed in the yard compared with the
« number of wagons dealt with;

« *d*) percentage of wagons damaged
« in relation to wagons shunted.

« It is, however, difficult to draw
« comparison between one yard and
« another and these factors are, there-
« fore, only really useful for the purpose
« of comparison between the output of
« the same yard at different periods.

23. *General control of the results obtained.*

« Effective and constant control of « the work must be maintained at all « levels in order to keep up the effi- « ciency of the yard in all its phases. « This control, which is based on the « appropriate documents and statistics, « must above all make it possible to « adapt the different resources of the « yard and the train services to the « actual traffic requirements. »

[ 656 .225 & 656 .261 ]

## QUESTION VIII.

**In view of the ever increasing weight of road competition, what are the most appropriate measures, apart from reduced rates, for keeping traffic by full wagon loads in the hands of the railway?**

**Would not road transport at the end of the railway journey be justified in order to get direct contact with clients who are not connected up by railway sidings?**

**Should not the road vehicles required to assure such transport be attached to centre stations, equipped with suitable handling equipment, from which the road transport services would start?**

**Choice of the vehicles to be used.**

### Preliminary documents.

Report (Belgium and Colony, Denmark, France and Colonies, Luxemburg, Netherlands and Colonies, Norway, Poland, Switzerland and Syria), by J. GIRETTE (See *Bulletin*, April 1950, p. 325 or separate issue No. 7.)

Report (America (North and South), Burma, China, Costa Rica, Egypt, Great Britain and North Ireland, Dominions, Protectorates and Colonies, India, Iraq, Iran, Malayan States, Pakistan), by A. A. HARRISON. (See *Bulletin*, May 1950, p. 775 or separate issue No. 15.)

Report (Austria, Bulgaria, Czechoslovakia, Finland, Greece, Hungary, Italy, Portugal and Colonies, Rumania, Spain, Sweden, Turkey and Yugoslavia), by Mario DIAS TRIGO. (See *Bulletin*, May 1950, p. 809 or separate issue No. 16.)

*Special Reporter :* P. MAROIS. (See *Bulletin*, October 1950, p. 2096.)

## DISCUSSION BY THE SECTION.

### Meeting of the 2nd October 1950.

President : DR. G. C. PALMIERI, ENGINEER.

— The Meeting began at 9.15 a.m.

**The President** (in French). — Gentlemen, we will now examine the Question VIII. This was the subject of three noteworthy reports, and M. MAROIS, was responsible for drawing up the special report and summaries.

I call upon Mr. MAROIS.

**Mr. Marois,** *Special Reporter,* (in French). — As the President has just said Question VIII was covered by three reports with which you have been able to make yourselves familiar in the *Bulletin.*

I will also remind you of a lecture given by Mr. GUIBERT, extracts from which were published in the August 1950 issue of the *Bulletin,* dealing with a similar question to that on the agenda for the present Congress.

According to practice, these reports were based on a common plan from the replies received to a single questionnaire. They include a certain number of the ideas which we all have about the question of transport. When we consider how transport is carried out in our country, we see that in most cases it is necessary to complete the railway transport by some sort of terminal transport.

When we look into the question of costs, we find that if we reduce the cost of the main transport by rail, the cost of the terminal transport will increase the transport price properly so-called and represents an important part of the costs, even if the railway transport has been over a distance which it is impossible to describe as short.

Road transport has one valuable advantage : it carries out the transport from door to door. This advantage the railway must endeavour to provide likewise in order to adapt its transport services to the needs of its clients.

The Reporters, bearing these observations in mind and examining the steps to be taken to remedy this inferiority of railway transport, dealt with the question under three headings.

The first question was to find what means were available to reduce the cost of terminal transport.

The Reporters questionned the railway Administrations to find out if they had considered the concentration of the transport services in a certain number of centre stations, where the installations could be better adapted to deal with the handling required in the change over from rail to road. They endeavoured to find out whether such a concentration was of value or otherwise.

It appears that in this field the opinions of the railways are divided. Certain Administrations consider that concentration in a centre station is of value and likely to make the operation more economical. Others do not consider such concentration of any great use.

We may feel that the railways have no great experience of such concentration of the full load traffic in certain stations. Although some of them have applied the method to some extent in the case of the parcels traffic, they do not appear to have done so for full loads.

The second idea had as its object to examine the methods by which the railway can provide door to door services.

The Reporters studied the different techniques used by the railways : the container, the rail-road trailer, the wagon-conveying trailer, and they also considered the use made by the railways of such stock which makes door to door services possible.

Finally the third idea stresses the fact that there are also other methods which the railway can use to satisfy its clients : there is the question of the timetables,

which is of the greatest interest, there is the question of the use of sites for stores in the stations, etc...

In view of the way these questions were examined, it seemed to me that we could retain a certain number of summaries which I am going to read you, and which we can now discuss.

**The President.** — We will therefore go on to reading the summaries and discuss them one by one.

**Mr. Marois.** — *Summary 1 :*

1. Some railways consider that the use of lorries for haulage services, by extending their radius of action, now makes it possible to concentrate the traffic in a certain number of well equipped station centres, by using motor haulage services over longer distances, and that this organisation will definitely lead to economies.

But although many theoretical studies of this idea have been put forward, it does not appear to have been the object of practical trials, except in the case of parcels traffic. It appears very desirable that such trials should be undertaken as soon as possible by different railways and the results published, so that everyone can profit by their experience.

**The President.** — Are there any comments ?

**Mr. Moulart,** *Belgian National Railways* (in French). — I was extremely interested in Mr. Marois' Report. In the case of the main lines, we are in agreement with him. He drew attention to the fact that the foundation of the organisation of full load road services is the cost of the terminal operations, the transfer from the wagon to the lorry.

I am wondering however if Summary 3 should not come first. It is the basis of the problem. In the first summary we might, it seems to me, stress to a greater extent the fact that this concentration in centre stations of the handling of full load traffic is the best way of reducing the cost of the terminal operations.

It is said that the concentration of the full load traffic in a certain number of centre stations will result in economies. In this summary, which I think should be number 3, we should define the terminal operations.

**Mr. Blee,** *British Railways.* — I prefer that we do not alter the order of the Summaries. I think this question of handling costs at terminals, expressed as it is in Mr. Marois' report, where economies can be made is not really a sound conclusion. There are, in my judgement, many other fields in which even greater economies can be secured. To alter the order of the recommendations therefore, would disturb the order of priorities. Emphasis on terminal economies would, I think, put the matter in a wrong perspective, since there are other economies which must be effected in so many fields of railway operation.

**The President.** — There are therefore two conflicting opinions. One delegate thinks that the cost of the terminal operations is the principal question, while another considers that other factors come into play amongst which economies must be sought in order to make the railway transport the cheaper.

I would like to know the opinion of the Meeting on this subject.

**Mr. Marois.** — If we had considered this the essential question, we would have put it first, but in reality they are all of equal importance.

**Mr. Moulart.** — I should like to point out that the situation is different on the British Railways where coordination has already made great strides.

Summary 3 stipulates that : « The reduction of the cost of such terminal transport is probably of greater interest to the railway than a reduction in the cost of transport by rail ».

On the other hand, to give some basis for comparison of the cost of terminal transport, I would point out that in the case of the parcels traffic, the transhipment of one ton represents almost the cost of 100 ton-kilometres.

**Mr. Elliot,** *British Railways.* — I appreciate what Mr. MOULART has declared, but, in view of the size and volume of the traffic with which we are dealing, I think what Mr. MAROIS and Mr. BLEE have said is really important, and from our point of view, we should be sorry to see any impression whatever written into the conclusion, that we regard the terminal costs as being in any way greater than some of the other activities which Mr. MAROIS and Mr. BLEE have mentionned.

**Mr. Delacarte,** *French National Railways* (in French). — The Belgian position is justified by the fact that the distances are in Belgium of the order of 100 to 200 km (62 to 124 miles) and it is logical that their point of view is different than the opinion of large railway systems where the distances are of the order of 500 to 1 000 km (310 to 620 miles).

**The President.** — Opinions are divided. Some delegates consider that Summary 3 should be put first; others are of the contrary opinion. In the organisation of door to door services, the cost of the terminal transport has to be considered, but there are other factors which must not be overlooked.

I think we should leave the summaries in the order in which they come in the special report.

**Mr. Marois.** — I would like to ask a question, not as a reporter but as a delegate.

What do the different railways intend to do as regards the centre-station for full wagon loads? The French propose to make a trial of a centre station for full loads by closing to this effect a certain number of stations. Have any other railways any intention of doing the same?

**The President.** — I call your attention to the question asked by the Special Reporter. He wants to know if other Administrations besides the French Railways are proposing to make a trial of concentrating the full load goods traffic.

**Mr. Blee.** — So far as Great Britain is concerned, we shall be carrying out such experiments, although I am not able to indicate the type of terminal organisation which will eventually evolve from these. But it is a fact that more concentration will take place under the programme which we have instituted ourselves for the integration of road-rail transport; and we shall be experiment-

ing with full wagon loads concentrated at a terminal and despatching them from that terminal.

**Mr. Marin,** *Italian State Railways* (in French). — One question : There are some stations on a line with little traffic which we wish to keep open. Do you think the full load wagons should be concentrated in a given station or should they be sent to certain stations with little traffic? We have some other lines which we wish to close as the traffic is too small. How would you concentrate in this case?

**Mr. Marois.** — This is a difficult question to answer. This is precisely why we wanted to carry out some trials in France. If you keep the lines open, I do not think there is any point in not taking the wagons to the small stations. To study the question of getting the best output, it would be necessary to make experiments on 2, 3 or 4 different lines, which would be dealt with differently in order to be able to arrive at some definite conclusions. There is no other way of answering Mr. Marin's question.

**Mr. Varjonen,** *Finnish State Railways.* — It was stated in the report that the Finnish Railways have organised haulage services for full loads for the last twenty years. There must be some mistake as we have not had any cartage arrangements for full load traffic at terminal stations. We make contracts with our clients if we want to do so and there are some clients who have made contracts with us; thus we experiment on a basis of mutual arrangement between the railway and the client. We as a railway undertaking have organised road services and rail services and offer whichever the firm should prefer. At the present time, we have two systems in force. We should be very interested in the results of the experiences of other countries.

**Mr. Vanderborght,** *Belgian National Railways* (in French). — The Belgian National Railways also intend to study the problem of centre stations.

**Mr. Tribelhorn,** *Swiss Federal Railways* (in French). — We have made a trial of the method used on the Netherlands Railways. We started with three centre stations, but the experiment has not proved conclusive. We intend to extend the radius of action of the motor vehicles from 20 to 25 km (12 to 15 miles) in order to be able to take the goods everywhere.

**Mr. Moulart.** — In answer to Mr. Marin's question, I must point out that here we have a new problem. In Belgium, we carried out an experiment on a secondary line; thanks to the closing down of the passenger services, we were able to reduce the operating costs; the concentration of the transport in centre stations would make it possible to close down the line. But this is a new aspect of the problem.

**Mr. Hammett,** *British Railways.* — This subject, it would appear, is one of retaining, or regaining, traffic to the railway. Therefore, it seems to me that what we have to consider is the service required by the traders. In the preamble to the report of the summaries it states « The British and Netherlands Railways, for example,

have developed the use of containers to the exclusion of all other methods ». I think there might be a slip there because containers are not the only method which Britain has adopted for the improvement in service and development of traffic.

One, in particular, is the establishment of railhead or concentration centres for dealing with miscellaneous consignments of traffic for distribution therefrom covering an area formerly dealt with at a number of smaller surrounding stations, thereby speeding up transits, effecting economy in wagon user and staff.

In considering the point of concentration, I suggest it will be generally found by experience the best centre to adopt for concentration is the nearest junction to the actual point of delivery or collection, thus affording direct rail service from and to a large number of stations as well as economy in road mileage costs.

This scheme in Britain is known as « Zonal Collection and Delivery Service. »

**Mr. Harrisson,** *Reporter.* — I can deal with Mr. HAMMETT's first point. The word « almost » should appear before the words « to the exclusion of ». In Great Britain, for example, various methods are employed, and full details thereof appear in my report.

**The President.** — This observation does not relate to the text of the summaries. As far as they are concerned, the discussion show that certain delegates are of the opinion that summary 3 should be turned into Summary 1; it seems however that the majority of the Meeting does not wish to change the order of the summaries.

If you have no objection, we can adopt the text of Summary 1 presented by the Special Reporter.

*— No objections being raised, Summary 1 was adopted without modification.*

**Mr. Marois.** — *Summary 2* :

2. The general opinion appears to be in any case that if the traffic is concentrated in this way in the station centres and the haulage services extended, it is necessary for the railway to have commercial control over such services, if there is to be no risk of losing the traffic at each end owing to competition.

**Mr. de Espregueira Mendés,** *Portuguese Railways.* — I do not know if the word « commercial » is very well chosen. I think it would be better to say « direct control » instead of « commercial control ».

**Mr. Vanderborght.** — I suggest simply saying « control » without either « commercial » or « direct ». We would say : « ... for the railway to have control... ».

**Mr. Marois.** — I think that we shall find it difficult to reach agreement about other things than « control ». The idea in my mind when I said « commercial control » was that it is possible to conceive of a multitude of ways of organising this haulage and the various relations between the railway and the road services.

The road services may be in the hands of the railway, when this latter is both railway and road service. Here it is more than under the control of, it is managed by it.

There is a second type of solution which consists in having the haulage services operated by other firms so long as they are controlled commercially and financially.

There is a third type, which was what I had in mind, which consists in hiring the haulier.

In this case, the railway gets the contract, fixes the rates for the transport and is responsible for all relations with the client. This is what I meant by « commercial control ». The road firm being a concessionnaire, has a contract with the railway. By saying « control » we make it clear that the railway retains its relations with the client.

**The President.** — It seems to me that we should accept the suggestion to simply say « under the control ». It is very difficult to be more precise.

**Mr. Blee.** — One other observation I would like to make is this; I do not wish to be difficult about the use of words, but I suggest that the three words « at each end » may be deleted. The real risk is that you lose the traffic altogether in some countries unless you have control. The words « at each end » could be misleading and, unless my interjection is regarded as a little hypercritical, I would like to see the three words left out.

**Mr. Voordecker,** *Principal Secretary.* — The French text has not been correctly translated into English, where it says « at each end ». It should be « from end to end ».

**Mr. Moulart.** — « From end to end ».

**Mr. Voordecker.** — The English text should be made to agree with the French text.

**The President.** — Apart from this alteration to the English text, are there any other remarks?

— *Summary 2 was adopted in the following amended form* :

« 2. The general opinion appears to be in any case that if the traffic is concentrated in this way in the station centres and the haulage services extended, it is necessary for the railway to have control over such services, if there is to be no risk of losing the traffic from end to end owing to competition. »

**Mr. Marois.** — *Summary 3 :*

3. The attention of the Congress should be drawn to the importance of the terminal transport as regards the cost of transport between clients who are not linked up with the railway. The reduction of the cost of such terminal transport is probably of greater interest to the railway than reduction in the cost of transport by rail.

**Mr. Blee.** — I feel here that I am really taking up the point I made when I spoke first. It would be a mistake, I submit, to put this question of the economies in operation in the wrong perspective. There are so many other factors, not only in Britain but, I believe, in other countries, where we shall have to find economies by concentration at terminals. For example, we ought to save engine power and train crews, etc. In place of the last sentence of Summary 3 I suggest the following words :

« It is of great importance to study

terminal layout, mechanical equipment and efficient operation of such terminal transport to effect the utmost economy in this part of the services. »

**Mr. Voordecker.** — Mr. BLEE is considering the possibility of mentioning that the reduction in the cost of the traction stock and staff also contributes to the economies realised.

**The President.** — The object of concentration is to make economies in various fields; mechanisation, the concentration of the wagons due to the concentration of the traffic,

**Mr. Girette,** *Reporter.* — There are two non-contradictory ideas put forward by Messrs MAROIS and BLEE. Mr. MAROIS' text is intended above all to stress the fact that for distances of 200 km (124 miles) the terminal costs as a whole are more or less equal to the rail transport cost. For these or smaller distances, all efforts to reduce terminal costs are just as important as efforts to reduce the transport costs. The railway itself can reduce the cost of the terminal operations in the stations themselves. Economies can be made in the user of wagons, engines and staff, but the fact that such economies are necessary does not mean that no efforts should be made to reduce the cost of the terminal operations.

**Mr. Moulart.** — What has just been said only confirms the usefulness of the suggestion I made just now to make Summary 3 No. 1. The third summary poses the problem and the Summary itself shows one of the ways of solving it.

What our English colleague has just suggested regarding the equipment of goods yards, engines, etc..., we all know. We know that there are other methods which we must try to put into force in order to reduce the operating costs.

We know that mechanisation can result in economies, but this costs a lot and we cannot do it in all the stations, both large and small. We cannot equip small stations with little traffic with costly apparatus. And the object of concentration is precisely to avoid as much as possible this multiplicity of heavy burdens.

There is no justification for including in Summary 3 the methods to be adopted, as these are already given is Summary 1.

**Mr. Vanderborght.** — I propose that the text be left as it was presented by Mr. MAROIS. As for the ideas expressed by Mr. BLEE, these are given in the Special Reporter's text.

**Mr. Marois.** — This discussion leads me to believe that the text insists to much on the value of reducing the cost of the terminal transport. In my text I said : « The reduction of the cost of such terminal transport is probably of greater interest to the railway... ». It is still possible to make great savings in railway transport, as Mr. BLEE has said. On the other hand, the text mentions terminal transport, but it is not only question of the terminal transport, there is also the handling.

I would willingly replace the second sentence of Summary 3 by some such text as : « The reduction of the costs involved in the terminal operations,

whether it is question of the handling in the station or the haulage between the station and the client's premises is of primordial interest ».

**Mr. Marin.** — I agree about this modification. However there is the idea of the cost of railway transport. The terminal costs are considered to be the same whether the goods have travelled a long or short way, from 150 to 200 km (93 to 124 miles). Proportionally, the terminal costs are higher in the latter case than when the goods have been transported a long way.

This idea should be stressed. We might say at the end of the summary : « taking into account the fact that the reduction of the terminal costs must be considered in the case of transports over longer or shorter distances ».

**Mr. Voordecker.** — If I understand it alright, Mr. Marin wishes to say « especially in the case, of short distance railway transport ».

**The President.** — We should add a sentence stating : « especially in the case of short distance transport » to bring out the idea that in this case the cost of the terminal operations are enormous compared with the cost of railway transport properly speaking.

**Mr. Marois.** — We might add to my suggested modification after : « ... is of primordial interest » : « which increases still more when the transport distance is short ».

**Mr. Delacarte.** — There is in Mr. Marin's idea that in the case of short distances the terminal costs are greater than the cost of railway transport. We might put a full stop after primordial, and then add. « In the case of short distances, in fact, these terminal costs are greater than the cost of the rail transport itself ». This makes it quite clear that the costs are higher in the case of small distances.

**Mr. Blee.** — I think, with respect to the last speaker, we are perhaps getting on to dangerous ground. I feel that the time must come when the railways must be prepared to lose that traffic which is uneconomical to deal with. We do not therefore wish, I suggest, to bring in that a special study should be taken of terminal costs by railways.

**Mr. Delacarte.** — I will not insist on it.

**The President.** — I propose therefore to adopt the modified text presented by the Special Reporter so that Summary 3 will read as follows :

« 3. The attention of the Congress should be drawn to the importance of terminal transport as regards the cost of transport between clients who are not linked up with the railway. The reduction in the cost of terminal operations, whether they be in the handling at stations or in the haulage between the station and the premises of the clients is of considerable importance, increasing when short distances are involved. »

— *Adopted.*

**Mr. Marois.** — *Summary 4 :*

4. Terminal transport can be assured by the railway itself, but the Reports seem to show that in the case of the full load traffic, such services are poorly used by clients who prefer private haulage.

There is a small correction I wish to make. During a conversation it was pointed out to me that the reports did not show that the railway services were poorly patronised. Perhaps this is an exaggeration. I suggest saying : « the client prefers ».

**The President.** — We would say therefore that « the client prefers to use » and the sentence « such services are poorly used » will be crossed out.

**Mr. Marois.** — We might say « many clients ».

**Mr. Moulart.** — I do not see that this text is very useful. What does it put forward in the way of new ideas? In Summary 2 we have already said « under the control of the railway ». Here we state that clients prefer private haulage services. These are not new ideas.

**Mr. Girette.** — We have to insist upon the importance of private transport. I thought that this fourth summary was of interest in showing that private haulage services are developing everywhere to the detriment of the public haulage services. This is an important fact. What conclusions can we draw from it? None at the moment, but we need one. All the Administrations whom I consulted told me that private haulage services were increasing. This is a general phenomenon and one day sooner or later we will have to take it into account. The point might be stressed without drafting a summary about it.

**Mr. Blee.** — I am in accord with the clause remaining in the Summary. I agree with the last speaker that it is for the delegates from each country to draw their own conclusion in regard to a point such as this.

**Mr. Moulart.** — The idea of the competition of private haulage services is given in Summary 5. In fact this states : « Attention is drawn to the mutual interest of the railway and public road hauliers to defend themselves against the competition of private transport ». We should not draw too much attention to this question.

**Mr. Delacarte.** — Summary 5 is concerned with private door to door transport. Summary 4 relates to public and private haulage services in the case of the terminal operations. Perhaps it would be better to word Summary 4 differently; I agree.

**Mr. Barbaut,** *Tunisian Railways.* — There is a certain ambiguity in using the words private haulage services. As explained by Mr. GIRETTE, it can be said that there are 4 ways of operating haulage services :

there are services organised by the railway with its own resources;

there are services organised by the railway by means of lorries owned by contractors with whom they have an agreement;

services organised by a public haulage undertaking which has no contract with the railway, the latter working the transport between stations;

private haulage services organised by clients themselves with their own lorries.

What are we to understand by private

haulage? Is it a question of haulage in the client's lorries or in vehicles belonging to a public haulage undertaking?

**The President.** — As regards private haulage, it is necessary to make a distinction between the different forms of haulage services : those carried by the client in his own vehicles, or haulage undertaken by a private firm.

I shall be glad if the Special Reporter will tell us whether he considers it advisable to bring out this point in the summary.

**Mr. Marois.** — The remarks just made are well justified. There is some confusion, as private haulage is not always carried out in the same way. We might say : « ... the reports appear to show that clients prefer to use their own lorries... ».

**Mr. Delacarte.** — « ... or those of a private haulier. »

**Mr. Marois.** — « ... prefer to use their own lorries, or the lorries of a firm now carrying out their transport services. »

**The President.** — We would prefer to alter the last sentence by saying « Clients prefer to use either their own lorries or the lorries of a firm habitually carrying out their transport services ».

**Mr. Moulart.** — Is it right to call the attention of everybody to the fact that we are beaten in this field of haulage services? Is it advisable to say that clients will not use our services and prefer private firms? By making such a statement, we put a weapon in the hands of our competitors; we admit we are beaten.

**The President.** — Does Mr. Moulart wish to suppress Summary 4?

**Mr. Moulart.** — We should not harp upon the idea that we are beaten by road competition. We are trying to overcome it. But in the meantime we should not spread the news that we are defeated.

**The President.** — Mr. Moulart sees certain dangers in adopting Summary 4 as now worded. It might encourage competition from private transport. We are here to defend, to improve our services, but from the railway point of view.

I return to the first suggestion. Should we keep Summary 4 or suppress it? If we retain it, should it not be made more precise so as not to supply arguments to those interested in operating haulage services, so that they cannot take our summaries as a basis for their competition.

**Mr. Girette.** — Perhaps Summaries 4 and 5 might be amalgamated. We note the development of private transport, both that of industrial firms and private firms. We conclude that it is necessary to defend ourselves more vigorously against such competition and we suggest that one of the way of fighting it is the development of a community of interest between the railway and public transport services.

**Mr. Delacarte.** — Summaries 2, 4 and 5 might perhaps all be amalgamated. Summary 2 states in substance that the railway must be able in all cases to assure door to door transport, either by its own resources, by means of a public transport

undertaking, or the private haulage services of the clients themselves. I think it is this idea of door to door services that should be stressed.

**Mr. Elliot.** — I think we will get into great difficulties if we are not careful. Personally, I agree with the altered text which the Special Reporter has given us.

I think that is safe and anyone can agree with it, but if we start trying to re-arrange this paragraph, I don't know where we shall get. Personally I would not like to see it done. I would strongly urge, therefore, that we accept the amendment to Summary 4. We cannot, with the different organisations which we have, possibly agree, and if we get into the position that the delegate on my right has suggested, I think we shall be trying to re-write the Summary here in this room, which is never successful.

**Mr. Hammett.** — I quite agree with Mr. ELLIOT, but I have read the particular paragraph to refer to short distance traffic. The paragraph as re-drafted by the Special Reporter is quite all right, but for long distance traffic I would not agree, because our experience over the past 10 years has shown that we have been successful in securing in various ways large quantities of traffic e.g., bricks, cement, etc., over long distances. I know the shorter distant client prefers to use his own vehicles or private hauliers.

**Mr. Harrison.** — With great respect to Mr. GIRETTE, I would suggest that we do not modify Summaries 4 or 5 but that we take Mr MAROIS' amendement as it now stands.

**Mr. Marois.** — We are going to try to conclude matters. It is evident that these summaries contain similar ideas. They might be amalgamated; they might be kept separate. If they are going to be amalgamated, it will be a long time before we reach an agreement.

Summary 4 states that when the transport has been carried by the railway, the haulage can be undertaken either by the railway or by the client. Summary 5 relates to private transport from one end of the journey to the other; it is a formidable competitor for the railway and for the public haulage services.

I agree with Mr. HARRISON that the summaries should be left as they are, but Summary 4 modified in this way : « ... taking into account however the desire of some clients to use either their own lorries or the lorries of a firm habitually carrying out their transport services ».

**The President.** — The beginning of Summary 4 would therefore be retained and it would end with the sentence the Special Reporter has just suggested.

**A Delegate.** — A simple question of the wording : I suggest saying « public haulage firm » instead of « firm habitually carrying out their transport services ».

**Mr. Marois.** — Agreed.

**The President.** — Consequently we are all agreed to adopt Summary 4 with the modification suggested by Mr. MAROIS The complete text will therefore be as follows :

« 4. Terminal transport can be provided

by the railway itself, but regard must be paid to the wishes of certain traders to use either their own lorries or lorries operated by a public haulage firm. »

— *Adopted.*

**Mr. Marois.** — *Summary 5 :*

5. Attention is drawn to the mutual interest of the railway and public road hauliers in defending themselves against private transport. This community of interest between the public haulier and the railway could surely be used to organise cheaper door to door services.

This question however does not appear to arise in certain countries, such as Great Britain and Bulgaria, where the regulations adopted have gone further in advancing the problem of the coordination of methods of transport.

**Mr. Delacarte.** — Greater precision is needed in my opinion. It says : « ... and public road transport services... ». It should be : « ... and public haulage services ». Road transport services is a different idea.

A second precision, it says : « ... in defending themselves against private transport ». We should add : « from one end of the journey to the other ». It is not the hauliers against which we have to defend ourselves but « ... from one end of the journey to the other ».

**Mr. Vanderborght.** — In my opinion the second sentence should be modified. The Congress should not present a Summary in the form of an interrogation. The French language is rich enough for it to be unnecessary to use the same form twice. I suggest saying :

« Public road transport undertakings, like the railways, have to protect themselves against competition by throughout transport from traders' own vehicles, and in view of this, it should be possible to reduce to the minimum door-to-door costs. »

**The President.** — Does everyone agree to this text? *(Agree.)*

In that case, Summary 5 will be worded as follows :

« 5. Public road transport undertakings, like the railways, have to protect themselves against competition by throughout transport in traders' own vehicles, and in view of this, it should be possible to reduce to the minimum door-to-door costs. »

**Mr. Marois.** — *Summary 6 :*

6. Experience has shown the value of the door to door technique which is the essential advantage of the motor vehicle. The oldest solution to the problem on the railway is the private siding. It would appear to be to the interest of the railway to do all it can to increase the number of such sidings. Certain railways appear to be in this respect much more ahead than others.

**Mr. de Espregueira Mendes.** — In Portugal, we attach great importance to private sidings. In certain cases, the railway even takes over all the costs involved in making the siding, on condition of course that the client guarantees a minimum amount of traffic per year. This is the subject of a contract between the railway and the client. In other cases, the railway pays some of the costs of making the connecting lines. I should like mention of this in Summary 6.

**Mr. Blee.** — It is, of course, difficult to reconcile practices in different coun-

tries on a point such as this, but certainly so far as Great Britain is concerned we would not be prepared to take the course of action which the Portuguese delegate has indicated. Is it not better therefore not to include it in the text?

**Mr. Moulart.** — I agree to some extent with Mr. BLEE. The policy of private sidings is of great importance, especially in the case of considerable traffic. But in the case of small amounts of traffic, we are acting contrarily to the policy we are pursuing in concentrating the traffic in centre stations. Other facts than transhipment are concerned, in particular the classification of the trains. If we have a great number of private sidings, we are not simplifying anything. To sum up, sidings of a certain importance might be developed, but not necessarily those with little traffic.

**Mr. Marois.** — I am rather put out by Mr. BLEE's remark. Personally I would willingly have added a sentence to include the idea that the railway seems to have great interest in sharing in the cost of making private sidings in certain cases in return for a guaranteed traffic from the siding.

**Mr. Moulart.** — In return for sufficient guaranteed traffic from the siding.

**Mr. Marois.** — Agreed.

**Mr. Blee.** — So far as Great Britain is concerned, I cannot envisage a practice under which, in order to secure traffic, we undertake the costs of laying in and maintaining sidings. That, however, does not preclude individual bargains with individual firms in any country so long as those who are conducting the negotiations are satisfied that they have made a good bargain. I would add that there is a commercial aspect of salemanship here because it is up to the railway commercial organisation to demonstrate to the trader the savings in cost of having his own warehouse accommodation for the reception of goods off railway vehicles. A private siding offers the trader many advantages, particularly from the point of view of handling and storing.

**Mr. Vanderborght.**—To meet Mr. BLEE's scruples we might say that adopting this wording does not mean that we are going to take over the cost of private sidings in every case. We still have in Belgium, per example, an undeveloped coal mining region. It is not our intention to make all the sidings at our own expense; we are not going to suppose all these mines are going to send their coal by lorry. But in certain particular cases, we might consider to help with the costs of private sidings.

**Mr. Girette.** — Mr. BLEE is taking up this attitude because in Great Britain there are still great possibilities for making private sidings without the railway having to agree to take any share of the cost. In such a case, the railway should not be advised to agree to taking over any of the burden. All the railways are not in such a position. Mr. MAROIS's suggestion is a practical way of increasing the number of private sidings being built. We might perhaps state that the financial

participation of the railway only comes into the picture when other factors are not enough to encourage the building of private sidings.

**Mr. Moulart.** — When we say that the railway has the greatest interest in developing the number of sidings, « developing» means at its own expense. Under these conditions it can share the costs.

**Mr. Marois.** — In order to reconcile these various opinions we might make a statement of fact. It says : « Certain railways appear to be in this respect much more ahead than others ». We might add « Some railways even pay part of the costs of making such sidings under certain conditions in return for the traffic expected from such sidings ».

The Summary also states : « It would appear to be to the interest of the railway to do all it can to increase the... ». By saying « all it can » we also include sharing in the cost.

**Mr. Blee.** — It is difficult to contest a question of fact, but in a report of these proceedings which, although they are both of a private and domestic nature to railway administration, nevertheless could cause argument, the statement is better omitted.

**The President.** — I would like to know if Mr. de Espregueira Mendes wishes to make an addition to the Summary or if he has withdrawn his suggestion. The question is rather an important one.

In certain cases the railway has to go to the client in order to get the transport.

We have some private sidings which give real door-to-door services. I think it should be stressed that the railway has every interest in developing the door-to-door services by making private sidings. This is the point under debate. We talk about sidings and say nothing to bring out the idea that we want to aid, to encourage the construction of private sidings.

I would like to know the opinion of the Meeting on this point. If the majority want the fact reported, we can draft a wording likely to satisfy all the delegates. If the Meeting does not share this opinion, we will give up the idea.

**Mr. Barbaut.** — If the text can be used as an argument by the client who wants to get such facilities it can also be used by the railway to press their point with the Administrations on which they depend.

**Mr. Blee.** — If I said that I insist, it would appear that I and my British friends were unreasonable. I do most strongly advise that we leave the summary as drawn by Mr. Marois, and I suggest that the point which our Portuguese friend has mentioned is clearly embraced in the penultimate sentence of Mr. Marois' report « it would appear to be in the interest of the railway to do all it can... ».

**Mr. Marin.** — As you know we have already done a lot in Italy to increase the transport capacity. To try and please everyone, I suggest the following wording : « The railway appears to have the greatest interest in doing all it can to increase the number of private sidings, even if this means certain comitments for the railway ».

**Mr. Blee.** — I hope that Mr. MAROIS will agree with me that in the circumstances of to-day we need to be very clear minded and we should not include the extra sentence if we can possibly help it.

**The President.** — It is proposed therefore to retain the Special Reporter's text stating : « The railway appears to have the greatest interest in doing all it can to increase the number of private sidings » without anything more.

**Mr. Vanderborght.** — I would like to ask Mr. MAROIS if he has given up his suggestion of adding to the original text the sentence stating : « The railway appears to have the greatest interest in certain cases in sharing in the cost of making private sidings in return for a sufficient guaranteed traffic from the siding ». This is a simple statement of fact.

**Mr. Blee.** — I would like to suggest that the text stands as drawn.

**Mr. de Espregueira Mendes.** — To state that certain countries have proceeded in such and such a way does not oblige the others to do likewise. The Administration alone can judge whether it is advisable or not to build or share in the cost of building private sidings. If the railway shares in the costs, it is to get more traffic. If it sees no advantage in so doing, it will not share in the cost, nor build such sidings. It is possible to quote several examples of cases in which the railway has obtained an increase in traffic by sharing in the cost of such sidings. This policy has for objective the development of the door-to-door service, in favour of the important clients.

**Mr. Marois.** — Mr. VANDERBORGHT asked whether I wished to retain my suggestion. I am trying to draft a text which will satisfy all the Delegates. The question arises as follows :

Mr. BLEE has explained the risk of starting the idea by adding this sentence that the railway will share in the cost of making private sidings.

The PRESIDENT pointed out that we have stated that the railway must go to its clients.

Mr. BARBAUT made a very interesting observation. If we have dealings with our clients, we also have Administrations behind us controlling us. And it is not without interest to have some arguments to present to them.

Should we alter the wording right from the start, or simply make an addition to the text? Such an addition does not seem to be very dangerous. Here it is in a slightly modified form :

« Some railways are prepared to share in the capital costs of providing private sidings on condition that the traders concerned guarantee an adequate volume of traffic ». We should either insert this sentence or nothing at all.

**The President.** — I think the discussion has gone on long enough. According to the Special Reporter it is a question of making a statement. It is therefore not a suggestion but rather a statement upon which I will ask the Meeting to vote.

— *The majority were in favour of the addition suggested by* Mr. MAROIS.

**The President.** — The text of Summary 6 will therefore be :

« 6. Experience has shown the value of the door-to-door technique which is the essential advantage of the motor vehicle. The oldest solution to the problem on the railway is the private siding. It would appear to be to the interest of the railway to do all it can to increase the number of such sidings. Certain railways appear to be in this respect much more ahead than others. Some railways are prepared to share in the capital costs of providing private sidings on condition that the traders concerned guarantee an adequate volume of traffic. »

— *Adopted.*

**Mr. Marois.** — *Summary 7 :*

7. When clients are not linked up by private sidings, the railway does not seem to have taken sufficient interest to date in the other methods which enable the door-to-door technique to be obtained, using the railway for the main part of the journey. It would appear advisable to make great efforts in this direction.

**The President.** — No comments?

— *Summary 7 is adopted without comment.*

**Mr. Marois.** — *Summary 8 :*

8. This effort would involve not only capital investment, but also commercial organisation. Clients must find available at the railway station all the facilities obtained from its competitors, and the railway should collect and deliver goods just like the road haulier. It is found that when the railway confines itself to perfecting technical arrangements and informing its clients about them, it does not get any results. Experience in Great Britain, from this point of view in connection with door to door services, shows in the clearest way the results that can be obtained with a proper commercial organisation.

**Mr. Barbaut.** — It seems to me that this Summary would be better after Summary 2. It is an essential question which depends on technical considerations.

**Mr. Marois.** — What conclusion do you draw from that?

**Mr. Barbaut.** — It is so very important, it is the basis of everything, and we should include this sentence in the technical considerations.

**The President.** — Do you want to go back to Summary 2?

**Mr. Barbaut.** — I would have preferred to do so. But we cannot go back to it.

**Mr. Marois.** — I think this remark is well founded. It should have been affirmed that if the railway is to succeed commercially, it must make the necessary effort to see that it offers its clients the same facilities as its competitors. This observation would however make it necessary to alter nearly all the summaries, which would be rather difficult. I agree with Mr. Barbaut as to the importance of this summary, but I do not see how we can alter the whole of the text at this meeting.

**Mr. Barbaut.** — It is an essential statement.

**The President.** — Does Mr. Barbaut insist upon changing the order of Summary 8?

**Mr. Barbaut.** — No, not at all.

**The President.** — Are there any other remarks?

— *Summary 8 was adopted without modification.*

**The President.** — Seeing how late it is, I propose to adjourn the rest of the discussions until to-morrow.

— The meeting adjourned at 12.15 p.m.

## Meeting of the 3rd October 1950.

PRESIDENT : DR. G. C. PALMIERI, ENGINEER.

— The Meeting began at 9.30 a.m.

**The President.** — Gentlemen we will continue our examination of Question VIII. Will Mr. MAROIS please read Summary 9.

**Mr. Marois.** — *Summary 9 :*

9. A certain number of solutions making door-to-door transport possible have been perfected : containers, rail-road trailers, wagon-conveying-trailers. It seems that up to date experience does not warrant the recommendation of one rather than another of these solutions. The different railways should continue their trials. It is not certain that a single solution can solve all the problems arising. In the end, it is the client who is the best judge of what suits him, and he should not be forced to adopt one solution rather than another when experience shows that they all have their uses. It is necessary however, for economic operation, only to have a small number of types of no matter what solution adopted.

**The President.**—Are there any remarks?

— *Adopted without modification.*

**Mr. Marois.** — *Summary 10 :*

10. In addition, it seems essential that the railway should so organise its operation that the wagons used for the transport of containers or rail-road trailers should have a good user. Careful grouping of such traffic is essential if cost is to be such that attractively low prices can be offered to clients.

**The President.** — No comments?

— *Adopted without modification.*

**Mr. Marois.** — We now come to the series of Summaries dealing with other matters than door-to-door services.

*Summary 11 :*

11. In the fight against competition, the railway should not neglect other improvements to its services capable of inducing clients to choose it in preference to other methods of transport. Safety, rapidity and regularity of transport should all be increased. Timetables which enable the traffic to leave and arrive at the most suitable hours are of greater value than actual speed. For example, there is no benefit in saving a few hours on the transport of food-stuffs if this saving will not enable them to be available as soon as the markets open.

I would like to draw the attention of the Meeting to the fact that the word « clientèle » in the French text may lead to confusion. At the end of the summary where it says : « ... si ce gain ne permet pas de les mettre à la disposition de la clientèle... » « clientèle » means « railway

clients ». The goods must be available to the seller, he must have time to get his goods in the shops. I suggest a slight alteration to the French text, by saying : « ... si ce gain ne permet pas de les mettre en vente... ».

**The President.** — I do not suppose there is any objection. The Summary will therefore be worded as follows :

« 11. In the fight against competition « the railway should not neglect other « improvements to its services capable « of inducing clients to choose it in pre- « ference to other methods of transport. « Safety, rapidity and regularity of trans- « port should all be increased. Time- « tables which enable the traffic to leave « and arrive at the most suitable hours « are of greater value than actual speed. « For example, there is no benefit in « saving a few hours on the transport « of food-stuffs if this saving will not « enable the trader to place his goods « on the market in good time. »

— *Adopted without comment.*

**Mr. Marois.** — *Summary 12 :*

12. The building of special wagons adapted to special requirements is also another way of retaining railway traffic. Opinion seems to be divided concerning the value of including such special wagons in the ordinary stock, or encouraging the private firms making use of them to build their own.

**Mr. Delacarte.** — I must point out that that this summary seems to exclude the possibility of having special firms to operate privately owned wagons. There are some firms, however, or it is possible to have such firms, who own special wagons which they use on behalf of other firms.

**Mr. Moulart.** — It seems to me that it would be better to say, instead of « Opinion seems to be divided... » « Opinion is divided ». There is no doubt about it, opinions are divided.

**Mr. Marois.** — If the Meeting agrees, we might take Mr. Delacarte's observation into account by saying « ... on the value of including these special wagons in the general stock or encouraging firms other than the railway to build them either to hire them out or use them for their own industrial requirements ».

**Mr. Delacarte.** — They are often subsidary companies of the railways.

**Mr. Marois.** — We might say « private firms » instead of « firms other than the railways ».

**Mr. Moulart.** — So as not to prolong the discussion, could we not say « or encourage the private firms using or operating them to build them themselves ».

**Mr. Marois.** — Is that sufficient?

**Mr. Delacarte.** — Yes.

**The President.** — We will therefore alter the second sentence by saying : « Opinion is divided (instead of seems to be divided) on the value of including such special wagons in the general stock or encouraging the private firms who use them or *operate them* to build them themselves ».

**Mr. Harrison.** — I think a better English text might be :

« Or encouraging the private firms

either to employ their own wagons or wagons rented to them by the railway administrations. »

**Mr. Elliot.** — I am not sure that « private firms » is correct. I think for the text it would be better to use the word « traders » instead of « clients ».

**Mr. Harrison.** — « Or encouraging the use of such wagons provided by the clients or private undertakings from which they hire them. »

**The President.** — So we would say : « ... or encouraging the clients who use or operate them to build them themselves. »

**Mr. Moulart.** — The clients operate them.

**The President.** — Or make use of them.

**Mr. Brugère,** *Tunisian Railways* (in French). — I suggest saying : « ... who use them on their own behalf or for a third party ».

**Mr. Delacarte.** — It would be better to say : « who operate them ».

**Mr. Harrison.** — I suggest to say : « Opinion is divided concerning the value of including such special wagons in the ordinary stock or encouraging the use of such wagons provided by the clients or by private undertakings from which they hire them ».

**The President.** — It is my impression that the English text is not quite the same.

**Mr. Voordecker.** — We might say : « ... ou à encourager l'emploi de tels wagons fournis par les clients ou par des entreprises privées qui les donnent en location ».

**The President.** — I think that this wording will enable us to reach agreement. If there are no objections, Summary 12 will therefore read :

« 12. The building of special wagons adapted to special requirements is another way of retaining railway traffic. Opinion is divided concerning the value of including such special wagons in the ordinary stock or encouraging the use of such wagons provided by the clients or by private undertakings from which they hire them. »

— *Adopted.*

**Mr. Marois.** — *Summary 13 :*

13. It is to be recommended that all facilities be provided at railway stations that their size and layout make possible. The renting of sites and providing of handling gear are of the greatest interest.

**Mr. Harrison.** — In the English version the word « letting » would be more suitable than « renting ». « The letting of sites... ».

**Mr. Barbaut.** — It seems to me that the second part of this summary is rather restrictive. The meaning of the term « every facility » should be made more stronger as in the proposed text it relates explicitly to the letting of sites and the use of handling gear. Sites may be provided free of charge, just as free use may be allowed of the handling gear. Further-

more, there are stations with little traffic where the clients are not very important, and the layout of the station makes it possible to use sidings or make private sidings by means of the existing installations. This comes up against the points studied yesterday concerning private sidings.

**Mr. Marois.** — If this restrictive aspect of the Summary is to be got round, I would point out to M. Barbaut that we could add the words « for example » to show that there are other possible solutions in addition to these.

**Mr. Elliot.** — I think that is all right. I was only going to raise the point that Mr. Blee and one or two of us made yesterday of the danger of giving these sites free. I would prefer to leave it as it is, with the slight alteration that has been made.

**Mr. Marois.** — We could, as Mr. Elliot suggests, put a comma after « permit » and continue by saying « such as the letting of sites and the provision of handling equipment ». The words « are of the greatest interest » being omitted.

**Mr. Girette.** — The summary stipulates at the beginning « It is to be recommended... ». I think everyone would agree that it would the better to say « *is* recommended ».

**The President.** — That is true; it is more definite. Everyone will agree I am sure to say « *it is recommended* ». If there are no further comments we will adopt Summary 13 in the following form :

« 13. It is recommended that all facilities should be provided at railway stations which their size and layout permit, for example, the letting of sites and the provision of handling equipment. »

— *Adopted.*

**Mr. Marois.** — We now come to a summary of a more general nature.

*Summary 14 :*

14. Finally, the attention of the Congress should be drawn once again to the importance of the general organisation of transport. Mr. Harrison recalls that the President of the British Transport Commission recently stated that « it is not inopportune to point out to commercial and industrial firms in general, and to those proposing to make use of private transport in particular, that public transport cannot carry on and be self-supporting unless it has a sufficient number of clients to whom it is in a position to supply a good service ».

If commercial and industrial firms make use of their own vehicles to transport the goods in question and only send the bulky and less paying goods by rail, there is no doubt but that the cost of public transport will increase in a way that in the end will be detrimental to general economy.

**Mr. Moulart.** — The idea summarised by Mr. Marois is a very interesting one to stress; however I suggest simplifying the text whilst retaining the same idea. This is what I propose : « Commercial and industrial firms must be convinced that exaggerated use of private transport, which generally carries goods which can stand high tariff rates, is contrary to the general economy. It increases in fact the cost of public transport, not only owing to the reduction in the volume of traffic, but also on account of the kind of goods they get ».

**The President.** — Before we examine this suggestion we will read it in English.

**Mr. Harrison.** — May I suggest that one or two members of the English delegation have an opportunity of looking at the wording carefully and of suggesting a translation which would be acceptable to us.

**The President.** — We must first of all decide whether we are going to consider Mr. MOULART's suggestion or whether we ought to improve the text presented by the Special Reporter.

Before we give up Mr. MAROIS' wording, we must decide if there is an advantage to be gained from examining the new text.

**Mr. Marois.** — I think it is better to retain the quotation in our summary, as it seems a good idea to claim the support of a high authority, an opinion likely to carry more weight with the Public Authorities than the general text of a Congress. I suggest moreover : « Finally, the attention of the Congress should be drawn once again to the importance..., etc. ». Our attention has indeed been called to it and the quotation is included so that it can be used when dealing with the Public Authorities. I suggest we retain : « The attention of the Congress is once again drawn to the importance..., etc. », include the English quotation which carries great weight, and end by saying « It would be desirable if the Public Authorities drew suitable conclusions from this statement ».

Consequently I propose that we retain the English quotation so that we can support our statement by that of a highly rated authority, adding a sentence explaining that this statement is addressed to the Public Authorities.

**Mr. Harrison.** — I agree with the idea of retaining the citation, but I would prefer not to add the reference to public authorities being invited to take notice of it. I would have thought that since representatives of public authorities are present this point might be left to them. I like the wording of the final paragraph as it now stands.

**Mr. Moulart.** — For my part, I am not much in favour of including quotations in the resolutions of the Congress. It has never been done. The delegates to the Congress should have their own personal opinions and make the most of them. As far as I am concerned, I do not see that quotations are very useful. Does this mean we should leave out the last paragraphs. These things should be more closely examined as this summary is not very clear.

**The President.** — This discussion shows that the Meeting in general is in agreement about Summary 14, but there are some objections regarding quotations which can be used in support of our case to the Authorities. It seems to me however that the Congress should speak for itself, as it is well qualified to do.

If there are no objections, we might modify the wording by leaving out the part giving the opinion of authorities who have studied the question. And we might make a recommendation in the name of the Congress, as it is of great

value to draw the attention of the Public Authorities to the importance of not leaving the railways to perish.

**Mr. Marin.** — I agree about leaving out the first part of Summary 14 giving Mr. Harrison's quotation. I agree with him; I do not say that it is useful to suppress it because it is not true, but it must not be of use to other methods of transport. It must be pointed out that the burdens of the transport undertakings should be applied to everyone of them; in their opinion, goods should travel by the most economical method. Obviously the public who use the different methods of transport are interested in finding the cheapest methods.

As for me, I think it would be a good thing if one of the Congress Summaries stressed a statement to the effect that we agree with this theory because it is not true that the railways are more economical than road transport, except in the case of long distances where obviously the railway is the more economic. We should also stress the fact that the burdens of the transport undertakings should be applied to everyone of them. We might consider the following suggestion :

« Finally, the attention of the Congress should be drawn once again to the importance of co-ordinating transport. It appears necessary to agree to a distribution of the traffic between the different possible methods of transport, on the basis of the most economic costs offered by these different methods of transport, based on the same conditions regarding load, traffic and social obligations. »

**The President.** — A moment please to enable Mr. Moulart's text to be translated. There is also another translation to be made. Mr. Marois has prepared a new draft based on those of both Mr. Moulart and Mr. Marin, i. e. taking the useful ideas from each of their suggestions.

**Mr. Marois.** — We must limit the issue to a few simple ideas. Mr. Moulart probably has reason : it is not usual to include quotations in the resolutions of the Congress. We wish to call attention to the importance of the organisation of transport. I suggest a sentence which is a sort of compromise between the old text, that suggested by Mr. Moulart and that suggested by Mr. Marin. Here it is :

« Finally, attention should be drawn once again to the importance of the general relationship of transport, both public and private. »

I then take Mr. Moulart's text, modifying it slightly for two reasons : first of all because Mr. Moulart states that the industrial and commercial firms must be convinced. These words are already used in the English quotation. We might say « public opinion ».

On the other hand, I think it is not a good policy to speak of « goods which can carry high transport charges ». We are already criticised for this *ad valorem* tariff system. I would prefer : « Public opinion must be convinced that the exaggerated use of private transport, whose object is generally the most economical goods to carry, is contrary to the general economy. It increases, in fact, the cost of public transport, not only because it reduces the volume of traffic, but also because it only leaves it the worst kinds of traffic.

Finally, to calm Mr HARRISON's fears, I would add :

« It is for the Public Authorities to draw useful conclusions from this statement. »

**The President.** — We will make an English translation of this text with the assistance of the English delegates.

— A the request of a Delegate the President re-read the French text.

**Mr. Marois.** — We might say : « the most *paying* goods to carry » instead of the « most economical ».

**Mr. Moulart.** — Instead of « ... the worst kinds of traffic » I suggest saying : « the least paying kinds of traffic ».

**Mr. Marois.** — Yes, and go on by saying : « It is the duty of the Public Authorities..., etc. ».

**The President.** — We will read the redrafted text of Mr. MAROIS. Here is the suggested text, resulting from our discussions :

« 14. Finally, attention should be drawn once again to the importance of the general relationship of transport, both public and private. It is necessary to convince public opinion that undue use of private transport for traffic which pays best is contrary to general economy. This not only leaves public transport with the less paying traffic but also reduces the total traffic entrusted to it and increases, in effect, the cost of transport to the public as a whole.

« It is for the Public Authorities to draw proper conclusions from this statement of the situation. »

— *The English translation of this text was then read.*

**The President.** — What does the Meeting think about this wording? Are we all agreed?

— *Adopted.*

**The President.** — Gentlemen, this brings us to the end of our programme for the day. Before bringing the meeting to an end, I want to thank you for the assiduous and active part you have taken in our work. I thank the Reporters and particularly Mr. MAROIS, who have helped us to smooth out many difficulties during these discussions.

**Mr. Elliot.** — I would like, if I may, as this has been an important and, in some cases, a difficult question, to offer you, Mr. PRESIDENT, and the SPECIAL REPORTER, our best thanks for the most efficient way you have conducted our affairs and from the British delegates' point of view thank you for the patience with which you have allowed us to be difficult.

**The President.** — I thank Mr. ELLIOT for his kind words, and declare the Meeting at an end.

— The Meeting ended at 11 a.m.

# DISCUSSION AT THE PLENARY MEETING.

## Meeting held on October 4th, 1950.

Dr. Eng. G. di Raimondo, President, in the chair.
General Secretaries : Mr. P. Ghilain and Dr. Eng. M. Valdivieso.
Assistant General Secretary : Mr. Ch. E. Whitworth.

**Mr. Ghilain,** *General Secretary* (in French). — We will now examine the Summaries relating to Question VIII, appearing in the *Daily Journal of the Congress*, No. 6 of the 3rd October 1950 and No. 7 dated 4th October 1950.

*(No objections were raised during the examination of these Summaries.)*

**The President,** (in French). — We may therefore consider the Summaries for Question VIII as ratified.

### SUMMARIES.

« 1. Some railways consider that the « use of lorries for haulage services, by « extending their radius of action, now « makes it possible to concentrate the « traffic in a certain number of well « equipped station centres, by using « motor haulage services over longer « distances, and that this organisation « will definitely lead to economies.

« But although many theoretical stu- « dies of this idea have been put for- « ward, it does not appear to have been « the object of practical trials, except in « the case of parcels traffic. It appears « very desirable that such trials should « be undertaken as soon as possible by « different railways and the results « published, so that everyone can profit « by their experience.

« 2. The general opinion appears to « be in any case that if the traffic is con- « centrated in this way in the station « centres and the haulage services « extended, it is necessary for the rail- « way to have control over such ser- « vices, if there is to be no risk of los- « ing the traffic from end to end owing « to competition.

« 3. The attention of the Congress « should be drawn to the importance of « terminal transport as regards the cost « of transport between clients who are « not linked up with the railway. The « reduction in the cost of terminal « operations, whether they be in the « handling at stations or in the haulage « between the station and the premises « of the clients is of considerable impor- « tance, increasing when short distances « are involved.

« 4. Terminal transport can be pro- « vided by the railway itself, but regard « must be paid to the wishes of certain « traders to use either their own lorries « or lorries operated by a public haulage « firm.

« 5. Public road transport undertak-
« ings, like the railways, have to protect
« themselves against competition by
« throughout transport in traders' own
« vehicles, and in view of this, it should
« be possible to reduce to the minimum
« door-to-door costs.

« 6. Experience has shown the value
« of the door-to-door technique which
« is the essential advantage of the motor
« vehicle. The oldest solution to the
« problem on the railway is the private
« siding. It would appear to be to the
« interest of the railway to do all it can
« to increase the number of such
« sidings. Certain railways appear to
« be in this respect much more ahead
« than others. Some railways are pre-
« pared to share in the capital costs of
« providing private sidings on condition
« that the traders concerned guarantee
« an adequate volume of traffic.

« 7. When clients are not linked up
« by private sidings, the railway does
« not seem to have taken sufficient
« interest to date in the other methods
« which enable the door-to-door tech-
« nique to be obtained, using the railway
« for the main part of the journey. It
« would appear advisable to make great
« efforts in this direction.

« 8. This effort would involve not
« only capital investment, but also com-
« mercial organisation. Clients must
« find available at the railway station all
« the facilities obtained from its com-
« petitors, and the railway should collect
« and deliver goods just like the road
« haulier. It is found that when the
« railway confines itself to perfecting
« technical arrangements and informing
« its clients about them, it does not get
« any results. Experience in Great
« Britain, from this point of view in con-
« nection with door-to-door services,
« shows in the clearest way the results
« that can be obtained with a proper
« commercial organisation.

« 9. A certain number of solutions
« making door-to-door transport pos-
« sible have been perfected : containers,
« rail-road trailers, wagon-conveying-
« trailers. It seems that up to date
« experience does not warrant the
« recommendation of one rather than
« another of these solutions. The dif-
« ferent railways should continue their
« trials. It is not certain that a single
« solution can solve all the problems
« arising. In the end, it is the client
« who is the best judge of what suits
« him, and he should not be forced to
« adopt one solution rather than another
« when experience shows that they all
« have their uses. It is necessary how-
« ever, for economic operation, only to
« have a small number of types of no
« matter what solution adopted.

« 10. In addition, it seems essential
« that the railway should so organise its
« operation that the wagons used for the
« transport of containers or rail-road
« trailers should have a good user.
« Careful grouping of such traffic is
« essential if the cost is to be such that
« attractively low prices can be offered
« to clients.

« 11. In the fight against competition,
« the railway should not neglect other
« improvements to its services capable

« of inducing clients to choose it in pre-
« ference to other methods of transport.
« Safety, rapidity and regularity of trans-
« port should all be increased. Time-
« tables which enable the traffic to leave
« and arrive at the most suitable hours
« are of greater value than actual speed.
« For example, there is no benefit in
« saving a few hours on the transport
« of food-stuffs if this saving will not
« enable the trader to place his goods
« on the market in good time.

« 12. The building of special wagons
« adapted to special requirements is
« another way of retaining railway traf-
« fic. Opinion is divided concerning
« the value of including such special
« wagons in the ordinary stock or
« encouraging the use of such wagons
« provided by the clients or by private
« undertakings from which they hire
« them.

« 13. It is recommended that all faci-
« lities should be provided at railway
« stations which their size and layout
« permit, for example, the letting of sites
« and the provision of handling equip-
« ment.

« 14. Finally, attention should be
« drawn once again to the importance
« of the general relationship of trans-
« port, both public and private. It is
« necessary to convince public opinion
« that undue use of private transport for
« traffic which pays best is contrary to
« general economy. This not only
« leaves public transport with the less
« paying traffic but also reduces the
« total traffic entrusted to it and in-
« creases, in effect, the cost of transport
« to the public as a whole.

« It is for the Public Authorities to
« draw proper conclusions from this
« statement of the situation. »

## QUESTION IX.

**Modern safety and signal installations (centralising apparatus for block system and signals).**

**Central electric apparatus with individual levers and « all relay » levers (all electric interlocking).**

**Automatic block-system with continuous current and coded current.**

**Light and speed signalling.**

### Preliminary documents.

Report (America, Burma, China, Egypt, Great Britain and Northern Ireland, Dominions, Protectorates and Colonies, India, Iran, Iraq, Malay States and Pakistan), by H. H. DYER. (See *Bulletin* for March 1950, p. 247, or separate issue No. 5).

Report (Belgium and Colony, Denmark, France and Colonies, Luxemburg, Norway, Netherlands and Colonies, Poland, Switzerland and Syria), by E. J. F. DERIJCKERE. (See *Bulletin* for July 1950, p. 849, or separate issue No. 18).

Report (Austria, Bulgaria, Czechoslovakia, Finland, Greece, Hungary, Italy, Portugal and Colonies, Rumania, Spain, Sweden, Turkey, Yugoslavia), by RIGO RIGHI. (See *Bulletin* for June 1950, p. 1389, or separate issue No. 28).

*Special reporter :* H. H. DYER. (See *Bulletin*, October 1950, p 2101.).

## DISCUSSION BY THE SECTION.

### Meeting of the 27th September 1950.

PRESIDENT : DR. G. C. PALMIERI, ENGINEER.

**The President** (in French). — We now come to the examination of Question IX. Will Mr. DYER, *Special Reporter*, be good enough to read the summaries from his report.

**Mr. Dyer,** *Special Reporter*. — Gentlemen, there have been considerable developments in railway signalling in recent years, and, although certain aspects of these developments have previously been discussed, the advent of electric traction has made this subject of particular importance at the present time. The introduction of electric train services often

necessitates an increase in the density and speed of the trains. Certain questions relating to technical details of equipment and design have, therefore, been considered for discussion.

Question IX is really divided into four separate points. Dealing with Chapter 1, I think I should make it clear that, although the actual heading is *Remote control and operation of points and signals by means of relays*, what we had particularly in mind was remote control by means of the coded relay system, rather than the control of points 200 or 300 yards away. I would, therefore, suggest that, in the first place, this should be made quite clear in the English translation, and that the heading should be amended to read « Remote control and operation of points and signals by means of the coded relay system », which will bring out quite clearly what we really had in mind.

I will now read the Summaries reached under that heading :

I. *Remote control and operation of points and signals by means of relays.*

1. Except in North America where special conditions obtain in that long lengths of line have been operated on the « Train Order » system, remote control of signalling by means of a coded relay system has not been used to a very large extent.

**Mr. Marchand,** *French National Railways* (in French). — I would like to go back to the question of the wording of the title of Chapter I. The French translation says : « Contrôle et manœuvre à distance des aiguillages et des signaux ». I think there is a mistake in the translation. To make the title quite clear, I suggest saying : « Commande et contrôle à distance des aiguillages et des signaux ».

**The President.** — The idea of coded current relays was raised. So it would be necessary to say « contrôle au moyen de courant codé » (control by means of coded currents). If we use this expression, we are opening up a very wide field which can also include other communication apparatus. In my opinion, the title of the original text should be retained as it is.

**Mr. Marchand.** — My remark was concerned with the words « contrôle et manœuvre »; in the French text, it should be « Commande et contrôle ».

**Mr. Voordecker,** *Principal Secretary* (in French). — You asked for the word « manœuvre » to be replaced by « commande à distance ».

**Mr. Marchand.** — I wish simply to underline that the English word « control » corresponds in French to the meaning of « commande » and not to the idea of « contrôle ».

**Mr. Dyer.** — If that is the true representation in French of what is meant in English by coded relay system, I have nothing more to say.

**Mr. Train,** *British Railways.* — I would have liked to have seen words added to say at the end of this paragraph « because station staff is required in any case to handle traffic ». That is the reason why it is not possible to use it to any great

extent in Great Britain. I suggest to add these words « because station staff are required in any case at the block post to handle traffic ».

**Mr. Marchand.** — In the text, it is stated that in North America, there was special conditions, in particular the « Train Order » system and owing to this the station staff are not required to intervene in the movement of trains. In Europa, we have no interest to imitate what is done in America because our station staff are required to handle train movements. However, I have no objection to these few words being added.

**Mr. Train.** — I am not pressing the question. It was only a suggestion I made. I do not press for it to be included.

**Mr. Dyer.** — In support of that I think I may say that some criticism, or shall we say some comment, has been made as to why the coded relay system of remote control, as we generally know it, has not been applied on certain single lines.

It has to be understood that staff have to be at those stations to carry out other duties, and, therefore, if we went to the expense of the cost of coded relay system of remote control we should not save any staff. They would still have to be there. That is the point Mr. TRAIN is making.

**Mr. Voordecker** (translating the remark of a Delegate, who spoke in English without giving his number). — This Delegate suggests replacing the Summary by a shorter text worded as follows : « Except in North America, remote control of the signals by means of the coded relay system has not been used to any great extent ».

**Mr. Dyer.** — I do not see why it should not be left as it is. The only question remaining is whether we should have the sentence recommended by Mr. TRAIN included.

**Mr. Righi,** *Reporter* (in French). — I am of the same opinion as Mr. DYER.

**The President.** — I think we might adopt the text suggested by the Special Reporter.

— *Summary 1 is adopted without alteration.*

**Mr. Dyer.** — *Summary 2 :*

2. A number of other railways have, however, used the system to some extent and intend to extend the system as circumstances permit.

**The President.** — No remarks?

— *Adopted.*

**Mr. Dyer.** — *Summary 3 :*

3. Where the system has been applied it has replaced manual block on double lines and token working on single lines and in some cases has enabled signal boxes to be dispensed with.

**Mr. Marchand.** — Should we not insist upon the idea that remote control by means of the coded relay system implies the automatic protection of the trains, this means, in principle, the use of the automatic block which supersedes all safety or block systems, which can be used at present.

I suggest saying : « Remote control of the signals implies, in principle, the use of the automatic block and allows the existing safety systems to be dispensed with.» I wish to point out on the other hand that operating on single track lines with the train staff system is not universal, in France, the train staff system is not used.

**The President.** — The train staff system is not the only system.

**Mr. Marchand.** — As a rule, the automatic block is necessary because the staff do not see the trains pass. It is necessary to make use of the automatic block system.

**Mr. Dyer.** — That is altering the whole purpose. This is in answer to the question what has it replaced, and this is a summary of the replies received from the various administrations. The question of automatic block does not arise in this question at all.

**Mr. Marchand.** — If we want to explain what this new method has superseded, we will have to detail all the safety systems.

**Mr. Dyer.** — I suggest, Mr. President that, if we are going to catalogue all the things that it could have replaced, reference to what it has replaced is better omitted, including the absence of any signalling at all.

**Mr. Train.** — I think perhaps that Mr. Marchand's last suggestion may be correct. I was going to suggest that a compromise might be reached by adding the words « on some railways » at the beginning of the summary but, if Mr. Marchand's suggestion is acceptable to Mr. Dyer, I will leave it at that.

**Mr. Dyer.** — That is merely to state that it has replaced the existing system of signalling. It is an easy way out.

**The President.** — Summary 3 will therefore be modified as follows :

« 3. Remote control generally implies the use of automatic block signalling and this makes it possible to do away with present safety measures. »

— *Adopted.*

**Mr. Dyer.** — *Summary 4 :*

4. The system has been used to effect operating economy, to speed up operation and to increase safety.

**Mr. Tenti,** *Italian State Railways* (in French). — I do not agree with the statement that the system has been used to increase safety. There was other installations offering as much safety. The main object in view with the new system is to increase the output and speed up the services. But there is no question of increasing the safety.

**Mr. Dyer.** — I suggest that we substitute the word « or » for « and ». It would then read « The system has been used to effect operating economy, to speed up operation or to increase safety ».

**Mr. Tenti.** — To increase the safety, other, less costly, installations can be

used. When it is a question of increasing the output of the lines, this system can be used, which is useful for increasing the speed of the services, and for making economies, but not for increasing the safety.

**Mr. Dyer.** — We are discussing the use of a coded relay system and we are asking a very simple question « For what reason it has been used ». We do not say that some other system could have been used but we say for what reason.

**A Delegate.** — The railways on which this system has been installed, also had the safety in mind.

**The President.** — It is certainly intended to increase the safety as well.

**Mr. Dyer.** — I suggest, in view of what has been said, that the words « To increase the capacity of the line » be added. The Summary would then read :

« 4. The system has been used to increase the capacity of the lines, to effect operating economy, to speed up operation or to increase safety. »

That should meet all requirements.

**The President.** — I will return to the suggestion made. Summary 4 will therefore be worded as follows :

« 4. The system has been employed to increase the capacity of lines, to secure economies in operating or to bring about greater safety. »

Does everyone agree to this text?

— *Adopted.*

**Mr. Dyer.** — *Summary 5 :*

5. It seems that the coded relay system could only be applied economically where the signalling controlled is at a considerable distance from the controlling point. The economical distance is generally decided by the cost of the coded relay equipment as against the cost of the number of controlling circuits needed for direct control of each signalling function.

**Mr. Lévi,** *French National Railways* (in French). — The proposed Summary refers to the part played by the distance in determining whether coded relays should be used or not. We have been led to use the coded relay system in stations where the distance is not more than 2 km. I would suggest a shorter and more complete wording for Summary 5 saying : « The economic comparison of coded relay equipment and ordinary equipment depends on the number and distance away of the signals to be operated and controlled ».

**Mr. Dyer.** — Candidly, I cannot see any alteration to what I have read. It seems to amount to exactly the same thing. We say that the economic distance is decided by the cost of the coded relay system as against the cost of running individual control circuits. In other words, if we could control these various signal functions no matter how many there are, each with its own circuit, at a less cost, then we could control those same functions by a coded relay system with only, say, two or three wires, and we would presumably adopt the cheaper system. I suggest that what we have down here means the same thing as that now proposed. The number of controlling circuits is the same as the number of functions to control.

**Mr. Lévi.** — The cost of a coded current installation depends on the distance and number of operations to be provided for. There are many parts used in common. It is not possible to speak of the economical distance.

**Mr. Dyer.** — I have a final suggestion to make that might be acceptable to the Delegates, and that is « the economical distance is generally decided by the cost of the number of controlling circuits needed for direct control of the required number of signalling functions ».

**Mr. Train.** I suggest that we adopt Mr. Lévi's wording because the reporter will agree that it does not alter the text.

**Mr. Lévi.** — The economic benefits increase with the distance and number of installations. The economic comparison of coded relay systems and ordinary installations depends on the number and distance of the signals to be worked and controlled. We might even say : « The economic advantage increases with the distance and number of functions ».

**Mr. Dyer.** — I do not intend to agree very readily with any alteration to what I have said, because I do want to put the cost of the relay equipments against the cost of the individual circuits if you have to control each function separately. It is a perfectly straightforward argument. The only difference of opinion is « the number of controlling circuits » and someone else talks about « the number of functions ». If you have a number of controlling circuits you have the same number of functions.

**The President.** — We must consider whether Mr. Lévi's suggestion expresses the idea we want to put forward. We wish to say that the cost of installation depends on the number of apparatus and the distance. So let us say : « according to the number of functions and the distance ». We must not only mention the economic distance; that is not the only factor. The number of operations must also be taken into account.

**Mr. Dyer.** — I insist to retain my text.

**Mr. Lévi.** — All the same, I hold my objection.

**Mr. Voordecker.** — We might say : « From the economic point of view, the choice of the coded relay system depends on the cost of the equipment compared with that of control circuits ».

**Mr. Dyer.** — We must bring distance in. The economic balance is generally decided by the cost of coded relay equipment as against the cost of the number of controlling circuits needed for direct control of the required number of signalling functions over the distance involved.

**Mr. Fazio,** *Italian State Railways* (in French). — We talk about remote control and operation. First of all, we calculate the distance after which the system should be adopted. Mr. Dyer is right in stating that the economic distance is determined by the cost of the equipment. When we decide on the expenditure, we have to take the cost of the equipment into account.

**The President.** — Mr. LÉVI has told us that it is not only a question of the distance; there are other factors to be taken into account. The distance between signals is one of these factors. In France, the system has been used in cases where the distance did not come into the picture, as it was very short, not more than 3 km but there were so many signals to be operated that the system was found to be economical. It is right to insist upon the idea that the choice of this system depends on several factors and not only on the economic distance.

**Mr. Fazio.** — The economic distance, taking the number of signals into account, is generally the most economical.

**Mr. Vanderborght,** *Belgian National Railways* (in French). — Perhaps all these different opinions might be made to agree if the text was slightly altered. Fundamentally, it is a question of the financial result. We might therefore say : « the financial results » instead of the « economic distance ».

**Mr. Lévi.** — We already say so in speaking of the cost of the relay equipment.

**Mr. Vanderborght.** — To satisfy Mr. DYER we might perhaps mention the distance further on, by saying : « The financial result is generally determined by the cost of the coded relay equipment taking the distance into account, compared with the cost of control circuits, required for the direct control of each signalling function ».

**Mr. Dyer.** — « ... over the route in question ».

**The President.** — We might agree to this suggestion.

**Colonel Wilson,** *Ministry of Transport (Great Britain).* — Why cannot we have what has been suggested by Mr. DYER? Distance also should be taken into consideration.

**Mr. Lévi.** — In any case the first sentence of Summary 5 disappears, as I asked just now.

**The President.** — Yes, the first sentence of Summary 5 is deleted. The summary will begin with « The financial result... » instead of « The economic distance... ».

**Mr. Delacour,** *Secretary* (in French). — (Returning to Mr. VANDERBORGHT's suggestion). « The financial result is generally determined by the cost of coded relay equipment compared with the cost of the control circuits required for the direct operation of each signalling function over the route in question. » the last few words being suggested by Mr. DYER. Another delegate suggested saying : « the distance also being taken into account ».

**Mr. Lévi.** — I do not see the need for the word « control ». I suggested leaving it out and saying « ... with the cost of the circuits required... ».

**The President.** — To make sure we all agree, I will re-read the French text :

« 5. The financial result is generally

decided by the cost of the coded relay equipment as against the cost of the number of controlling circuits needed for the required number of signalling function over the distance involved. »

I think we are all agreed now.

— *Adopted.*

**Mr. Dyer.** — *Summary 6 :*

6. No special maintenance arrangements have been found to be necessary and there has been no particular difficulty in obtaining suitable maintenance staff though special training is required.

**Mr. Voordecker.** — The text should be reworded from the point of view of its form in order to avoid the repetition of the word « special » in the French text.

**The President.** — I suggest the following wording :

« 6. No special maintenance arrangements have been found to be necessary and there has been no particular difficulty in obtaining suitable maintenance staff, though special training is required. »

— *Summary 6 was adopted with this slight modification to the French text.*

**The President.** — As it is so late, I suggest we adjourn the meeting and continue the discussion to-morrow.

**Mr. Tenti.** — I would like to point out that many delegates in our Section would like to assist at the examination of Question III on marshalling yards by Section I.

**The President.** — The examination of Question III has been put off till Monday October 2nd, and arrangements will be made to enable members of our Section to participate in the discussions on Question III.

— The meeting adjourned at 12.15 p.m.

## Meeting of the 28th September 1950.

President : Dr. G. C. Palmieri, Engineer.

— The meeting began at 9.15 a.m.

**The President.** — Gentlemen, we will continue our examination of Question IX. We have got to *Chapter II : Electric power signal installations. Interlocked levers or free push-buttons or switch systems.* Will Mr. Dyer, *Special Reporter*, please read Summary 1.

**Mr. Dyer.** — *Summary 1 :*

1. Though free push button and switch systems are being used to an increasing extent it is considered that sufficient working experience has not yet been obtained to say whether such systems or the well-tried power signalling systems using miniature interlocked levers would be preferred.

To make it perfectly clear that we are dealing with relay interlocking installa-

tions, I suggest that we add to the heading in brackets (relay interlocking). That will agree with the heading of the paper itself.

**The President.** — I suppose everyone will agree to this. Consequently the title will be worded as follows :

« II. *Electric power signalling installations. — Interlocked levers, relay interlocking, free push-buttons or switch systems.* »

**Mr. Marchand.** — I have a small objection to make. We think that the experience obtained in connection with push-button systems is sufficiently conclusive to justify saying that they are preferable to interlocked levers. This is the definite opinion of the technical services of the S. N. C. F. In the summary it says : « sufficient working experience has not yet been obtained ». In France, we have already had experience of them, and sufficient to enable us to state that push-botton boxes are better than interlocked levers. Opinions may perhaps be divided. If so, the best thing would be not to express any opinion about the experience obtained.

**The President.** — Certain railways state that they have not yet sufficient experience; others, amongst them the S. N. C. F., claim that they have had experience and that it is conclusive. I think that under these conditions, there is no point in mentioning experience and we can cross out this phrase.

How do you think the summary should be reworded Mr. MARCHAND?

**Mr. Marchand.** — I suggest suppressing the paragraph. Since the English do not think there is sufficient experience, whereas others on the contrary consider that there is sufficient experience, we cannot agree any common summary.

**The President.** — Therefore you suggest suppressing the first paragraph?

**Mr. Marchand.** — Yes.

**Mr. Dyer.** — With the greatest respect, I say that this is the opinion of the administrations who have submitted their reports. We are not here to record the opinion of any one administration, and these matters have been very carefully considered by the reporters and myself, and this is a summary of the opinions expressed by all the administrations. If we are going to go through this paper and try to record the opinions of one administration, then we shall be here for several days. If anyone wants to see the opinions of the various administrations, they have only to read the reporters' notes to find out. This is a summary taking all the opinions of the various administrations.

**The President.** — Could we not say : « certain Administrations consider that sufficient experience has not yet been obtained..., etc. ». In this way, we could retain the paragraph.

**Mr. Marchand.** — I have no objections.

**The President.** — We will therefore make this slight correction to the text. Opinions are not unanimous, so we must be less

affirmative. Apart from this alteration, Summary 1 will remain unchanged.

I am of the opinion that as various comments have been made here, we cannot pay no attention to them; we must take them into account. I think the text suggested by the Special Reporter is not much altered by the addition demanded by Mr. Marchand, as there is no unanimity in any case.

**Mr. Voordecker.** — Instead of « it is considered » we will therefore say « certain Administrations consider... ».

**The President.** — The replies to the question set by the Reporter are practically unanimous, but there are a few opinions to the contrary. If everyone agrees, Summary 1 will be worded as follows :

« 1. Though free push-button and switch systems are being used to an increasing extent, *certain Administrations consider* that sufficient working experience has not yet been obtained to say whether such systems or the well tried power signalling systems using miniature interlocked levers would be preferred. »

— *Adopted.*

**Mr. Dyer.** — *Summary 2 :*

2. The advantage of the free push button or switch system would seem to lie with the operating rather than the technical side as these systems embody a greater number of complicated circuits than a system of individual interlocked levers.

**Mr. Lévi.** — I quite agree that the advantage of the free push button is above all of an operating rather than a technical character. But the impression I get is that the wording minimises the advantages of these systems. Would not the special Reporter agree to a broader wording as far as the *advantages* are concerned. The French text in effect begins by « L'avantage du système... » we would prefer to say « Les avantages du système... » as they are many. As regards the purely technical advantage, push-button systems have been designed fitted with certain devices which make a far from negligible economy possible.

We have carried out comparison in the case of important boxes, boxes of average importance and small boxes. The economies we found varied from 8 to 15 %. The advantages of the push-button system are known, but it would be better not to insist upon the fact too much. We might say that the push-button system has advantages, without going into details.

There is a third observation which merits attention. Amongst the advantages of the push-button system, there is one that is far from negligible, which we have found as the result of experience. It is a question of two improvements which the traffic department insisted upon getting adopted : the automatic cancelling of the orders and the recording of the routes. It might perhaps be useful to bring out in this summary the fact that the advantages of the push-button system are of particularly importance when they make it possible to cancel or destroy the routes automatically and record the routes.

**The President.** — Will Mr. Lévi please submit a text for the modification he suggests.

**Mr. Lévi.** — In my opinion, this is how the summary should be worded : « The advantages are above all operating advantages «(without mentioning the disadvantages from the technical point of view) and I would like to add : above all when they make it possible to cancel automatically and record the routes.

**The President.** — I would like to know the opinion of the Special Reporter. They want us to make an alteration to the text by observing that from the operating point of view the push-button system has certain advantages, especially when so designed that the routes are automatically cancelled and recorded.

**Mr. Dyer.** — These are features which are normally associated with a push-button or switch system. It is no use saying « if it allows the automatic destruction... » as the train goes through. These are features of the push-button system so why emphasise it. I would like to ask, Mr. PRESIDENT, if there is anything wrong with the paragraph as it stands.

**Mr. Marchand.** — Automatic cancellation is not a characteristic of the push-button system. We have begun to make push-button signal boxes without automatic cancellation. We have also designed other boxes that are not push-button boxes when automatic cancellation is possible.

It is a good thing to draw the attention of the Administrations to the possibility of realising such cancellation. The number of operations to be done by the pointsmen is reduced by half with this system.

This Section is concerned with the « Working » and I think it is desirable to stress the points which interest the working.

**Mr. Dyer.** — I still maintain, gentlemen, that if you are putting in a modern system of panel working or relay interlocking, you must first consult the Operating Department to see what they require — that is, in accordance with the traffic requirements. We can do what they desire with a push-button system, and if automatic destruction of the routes as the train proceeds is a necessary requirement we shall provide it; if it is not necessary we shall not provide it. All that we are saying now is that the panel system is more to the advantage of the Operating Department than to the Technical Department, and that from the technical side the circuits are more complicated. It has been agreed between us at our meetings, and from the replies received, that this is a statement of fact.

**The President.** — An allusion to this subject would put us in the same position. We must find a formula that is acceptable to all the Delegates. There are two different points of view : the operating side and the technical side.

We can certainly state that from the operating point of view, the push-button system has great advantages, such as the automatic cancellation and recording of the routes. We might add that from the technical point of view, this involves certain alterations to the circuits. I do not know if this is altogether accurate.

**Mr. Lévi.** — It is quite true. I have indicated that savings can be obtained

from it; that should remove any scruples. And if you do not wish to mention the complication, I will agree. In spite of this, the push-button signal box is cheaper. It is therefore necessary to state this fact.

**Mr. Train.** — I was going to suggest a suitable alteration to the paragraph before Mr. Lévi mentioned it. I suggest saying : « The advantages, *if any*... ». This might meet Mr. Lévi's point.

**The President.** — There is no doubt that there are advantages. Mr. Marchand suggests : « The advantages are above all on the operating side ». Mr. Train suggests saying : « The advantages, if any, are... » I would like to return to the wording suggested by Mr. Lévi to see if it is possible for us to come to some agreement with the Reporter.

**Mr. Fazio.** — I suggest saying : « The advantage of the push-button system is above all in connection with the operating », and that would be sufficient, as Mr. Lévi, suggested. This reinforces the idea that the advantages are above all on the operating side.

**The President.** — We cannot continue this discussion any longer; we must come to some agreement. Will the Principal Secretary please read Mr. Lévi's suggestion.

**Mr. Voordecker.** — « The advantages of push-button or free switch system over the system using individual interlocked levers lie above all on the operating side. In view of these advantages, the technical complications need not be taken into account. »

**Mr. Dyer.** — In other words, the fact is that Mr. Lévi, although it is true, does not like reference to the more complicated circuits of the free push-button or switch system. That is at the root of the thing, I think.

**Mr. Lévi.** — My text runs : « The free push-button or switch system is above all advantageous from the operating point of view, particularly when it makes possible the automatic cancellation and recording of the routes ».

**The President.** — If we cannot agree, we shall have to ask Mr. Dyer and Mr. Lévi to meet this afternoon in order to draw up a text together for submission to the Plenary Meeting. I must call your attention to the fact that these discussions must be finished this morning. If you like you can make a start on the wording right away; in the meantime we will go on to Summary 3.

**Mr. Dyer.** — *Summary 3 :*

3. It is not considered that greater technical knowledge is required on the part of the maintenance staff for maintaining free push button or switch systems than for interlocked lever systems but proper training of the staff is necessary owing to the much larger number of circuits and relays associated with push button and switch systems.

**The President.** — Any comments?

— *Adopted.*

**Mr. Dyer.** — *Summary 4 :*

4. There is little difference in the overall prime cost of the different systems or in the cost of day to day maintenance. The number

of relays requiring periodical overhaul, however, is greater in the case of the push button and switch systems.

**Mr. Marchand.** — I suggest we leave out the word « much » (in the French text), as the difference is not very great.

**The President.** — Do you agree? *(Agreed).*

Summary 4 will read :

« 4. There is little difference in the overall prime cost of the different systems or in the cost of day to day maintenance. The number of relays requiring periodical overhaul, however, is greater in the case of the push-button and switch systems. »

**Mr. Dyer.** — *Summary 5 :*

5. It is considered that free push button or switch systems give rise to rather more serious and complicated problems for the traffic department in case of breakdown than with interlocked lever systems. This being so it is necessary to design the system so that a fault can be rectified quickly such as by the use of plug-in relays.

**The President.** — Any comments?

**Mr. Marchand.** — I would prefer : « ...more serious problems... » to « much more serious problems ».

— *Adopted with this modification.*

**Mr. Voordecker.** — It did not say « much » in the English text.

**Mr. Dyer.** — *Summary 6 :*

6. Opinions as to whether push buttons or switches should be fitted on a geographical panel or a separate desk panel are divided.

**Mr. Marchand.** — I would like to make a remark of a general nature in order to prevent any misunderstanding. As we have nearly got to the end of Chapter II, we are naturally considering route levers and not individual levers. We are considering the advantages of the route lever. We are all agreed that route levers are better than individual levers.

**The President.** — We cannot design individual push-buttons. It is possible to do so, but not advisable.

— *As no other comments were made, Summary 6 was adopted.*

**Mr. Dyer.** — We now come to Chapter III : *Automatic signalling. — Track circuits using permanent current or coded current.*

*Summary 1 :*

1. Coded current track circuits are used *fairly extensively* in North America and to some extent in France and in new installations in Italy. Some experimental sections have been installed on a few railways and the system is under consideration by others.

**The President.** — No remarks?

— *Adopted.*

**Mr. Dyer.** — *Summary 2 :*

2. Except where continuous cab signalling is being contemplated, the advantages claimed for the coded current system do not appear to compensate for the increased cost and complication except in special cases.

**The President.** — Does everyone agree to this wording?

— *Adopted.*

**Mr. Dyer.** — *Summary 3 :*

3. There is full confidence in the correct operation of permanent current track circuits both from the point of safety and regular operation.

I would like to make a little alteration to this. The question was « What confidence have you in the two systems from the point of view of safety and regularity ? », and I would like to suggest that the words « coded current circuits » be included in the paragraph as there is as much confidence in this type of current. Summary 3 then will be :

« 3. There is full confidence in the correct operation of permanent current track circuits and coded current circuits both from the point of safety and regular operation. »

**The President.** — Are we all agreed about this new wording ?

— *Adopted.*

**Mr. Dyer.** — *Summary 4 :*

4. It is not practicable to say what maximum length of track circuit is advisable as this depends upon several variable factors such as ballast conditions and type of rail fastenings.

— *Adopted without comment.*

**Mr. Dyer.** — *Summary 5 :*

5. The train shunt is governed by the maximum variation in the ballast resistance and by the minimum value to which this falls. Under conditions of maximum ballast resistance the train shunt cannot be higher than the minimum value to which the ballast resistance falls. The train shunt is therefore not governed by the length of a track circuit alone. Consequently actual train shunts for track circuits of various lengths cannot be given as so much depends upon other factors.

— *Adopted without comment.*

**Mr. Dyer.** — *Summary 6 :*

6. It is fairly general practice to lay down a minimum value of train shunt below which it should never fall. A different minimum value is usually stipulated for different types of track circuit but except on a few of the railways the lowest figure is 0.15 ohm. It is considered that this value is rather lower than could be desired and consideration should be given to the best means of raising it in order to increase the safety factor.

**Mr. Lévi.** — On the whole I quite agree with this wording. But I think I must point out that according to the reports the idea of the value of the train shunt varies considerably according to the railway. There is the idea of the practical train shunt value and the theoretical train shunt value. It varies from one railway to another, and I am afraid the text will be interpreted differently according to the railway.

**Mr. Voordecker.** — Do you want the text to be modified according to your remark ?

**Mr. Lévi.** — I would like the idea of the theoretical train shunt value to be introduced into the text.

**Mr. Dyer.** — We have got to see that we lay down a minimum shunt and that it is maintained. We cannot lay down a theoretical train shunt. We must lay down something which we can say must not be exceeded.

**The President.** — Mr. LÉVI is of the opinion that these values are interpreted differently by the different Administrations. Mention is made of the theoretical shunt value and the practical shunt value. Mr. DYER says it is not a question of the theoretical shunt value, but rather of the practical shunt value.

**Mr. Lévi.** — Looking at the text again, I see that it says in fact that the theoretical shunt value is 0.15 ohm. But in pratice, it is often higher. The lower figure is the interesting one, because this is in fact the theoretical shunt value. If some of you think it is the practical shunt value, the text becomes meaningless. Reading the reports, I found that the shunt value varied according to the railway, so that it seems likely the basis also varies.

**Mr. Righi.** — According to the reports as a whole, the minimum value possible is 0.15 ohm. We cannot go beyond this limit.

**Mr. Dyer.** — We do not assume anything. These are merely figures from the reports which we have received from the various administrations. I may say that if the reports had been read these little differences of opinion would not have arisen because the figures are given by the various administrations in the reports.

**The President.** — It is the practical minimum value below which we must not go.

**Mr. Lévi.** — It is the value which is fixed as the minimum in the making of the track circuits.

**The President.** — In actual fact, everyone, is free to do as he likes. As for the minimum practical value, it is that given in the report.

**Mr. Marchand.** — It says that the train shunt should not fall below 0.15 ohm. I think it ought to be : should not exceed, and should not go beyond.

The train resistance must be lower than 0.15 ohm. But according to the text, the resistance should be more than 0.15 ohm.

**Mr. Voordecker.** — 0.15 ohm is a maximum for the train and a minimum for the ballast.

**Mr. Marchand.** — The train shunt is a resistance; it must be as low as possible. Consequently it must be below 0.15 ohm.

**Mr. Voordecker.** — It is often very difficult to talk about maximums and minimums. The actual value should be given.

**Mr. Marchand.** — I simply remarked on the form.

**The President.** — We are in agreement.

**Mr. Voordecker.** — It seems that there is a misunderstanding about the meaning of the train shunt, and the track shunt. This is how these should be understood. (Mr. VOORDECKER explained them by means of a diagram on the blackboard.)

**Mr. Dyer.** — I think this is only due o a little misunderstanding of the term « train shunt », and we can come to a atisfactory conclusion if we alter the vording as follows :

« It is a fairly general practice to lay lown a value of shunt resistance which auses the relay to drop away, below vhich it should never fall. »

If that alteration is made to the first entence I think the remaining part could tay as it is. I do not know what you hink about that.

**Mr. Marin,** *Italian State Railways* (in rench). — It is the same thing.

**Mr. Lévi.** — The text could be retained f, in the French text, we left out : 1° the vords « minimum » and 2° « du train » fter « shunt ».

**The President.** — It is a question of naking this sentence just right. The Spe- ial Reporter has suggested a wording vhich will take into account the observa- ions made.

We will put the French translation right. Ve are all agreed upon the idea behind it.

Taking this first sentence as adopted, lo we all agree that the second part of he paragraph should be retained?

**Mr. Lévi.** — Provided a suitable French ranslation is forthcoming, I suggest ompleting it as follows : « For the le-excitation of the relay it is usual to x a minimum shunt considerably below he value of the shunt actually produced y the trains. »

The effective shunt is mentioned as though it were a constant. Permanent way technicians find it a variant. A solution must be found.

**The President.** — We can leave this task to Mr. Lévi.

**Mr. Delacarte,** *French National Railways* (in French). — I would like to draw the attention on another important aspect of the problem from the operating point of view : increasing the resistance of the track circuit would allow light trains such as railcars to run with the same safety factor. We experience very great difficulties in fact in getting light railcars in the track circuit zones, in particular in certain stations and to assure the safety we have to take special measures. It should be advisable to alter the resistance of the track circuit...

**The President.** — This is expressing a wish; the technicians will do what they can.

**Mr. Delacarte.** — ... so that light vehicles can be allowed without special orders.

**Mr. Dyer.** — Not if we merely raise the train shunt from the minimum value. It will not make the slightest difference to the light vehicles. I am afraid that would be giving the impression that we could rely on these light vehicles to operate track circuits. My experience at the moment is that we could not say. To state, in this report, that if we can keep the minimum value of the train shunt a little higher it would enable us to operate

track circuits with these light vehicles, would, in my opinion, give a wrong impression.

**Mr. Marchand.** — If the margin of working of the apparatus is increased, this margin can be used to increase the safety and to give the operating certain facilities as regards the restrictions imposed upon it. The operating should derive a certain benefit from this measure, but I do not think it will cover the circulation of all light vehicles.

**Mr. Dyer.** — My own view is that it would be very dangerous indeed to refer to the question of operation of track circuits by these light vehicles. It does not come within the purview of this report at all.

**The President.** — It seems that we are agreed as far as the idea is concerned. I will ask the Special Reporter, Mr. LÉVI and Mr. MARCHAND to meet together in a small committee and perfect the wording of this summary. The ideas involved have been discussed at length and I think agreement should easily be reached *(Agreed)*.

*— Summary 6 was therefore left in abeyance.*

**Mr. Dyer.** — We now come to *Chapter IV : Light signalling. Signalling for direction and speed.*

*Summary 1 :*

1. The systems of light signalling used by the different railways vary so much and each railway, owing to the amount of signalling already in use, is so committed to its own system that it would not be practicable to adopt a uniform system for all railways even if a common system could be agreed upon.

**The President.** — No comments?

*— Adopted.*

**Mr. Dyer.** — *Summary 2 :*

2. The majority of the railways use a system of speed signalling, some of them giving no indication of direction whilst others combine with their speed signalling some indication of the route to be taken. This is done in different ways, often by means of a series of conventional rulings combining the ideas of speed and direction in an arbitrary manner. This complicates the reading of the signals.

Other railways, notably the British, do not have speed signalling but use a system of four simple running aspects indicating danger, caution, preliminary caution and clear, with a direction indication at the home signal at a diverging junction.

Some of the advocates of speed signalling not giving any positive indication of the direction to be taken by a train at a diverging junction claim that a reduced speed indication does in fact give an indirect indication of the route set up.

If the signal indication given for a train approaching a junction set for a diverging route can be the same as that given for the straight route, for example with signals ahead of the junction at danger, then this claim cannot be substantiated.

**Mr. Tenti.** — I think that the second sentence of the first paragraph « This complicates the reading of the signals » should be modified and I think we should say : « This *sometimes* complicates the reading of the signals ».

I also suggest leaving out the words « in an arbitrary manner » in the same paragraph.

**The President.** — Does everyone agree?

**Mr. Marchand.** — Summary 2 shows that there is a certain difference of opinion between the railways, like the British Railways. Some of them do not give speed indications. This is why their signals are so simple.

When other railways consider it of value to give speed indications, there are obvious complications as it means giving an additionnal indication. But this does not justify « penalising » the railways which give speed indications, by saying that « this complicates the reading of the signals ».

For my part, I suggest simply suppressing the second part of the first paragraph including « reading the signals » stopping at « ... some indication of the route to be taken ».

**The President.** — Are there any objections to this suggestion?

**Mr. Elliot,** *British Railways.* — I should like to support the text as it stands. Mr. Marchand confirms what is stated in this text that it does complicate the reading of the signals, and there is no doubt of this.

Last year, I visited Australia, and it is much more difficult for the drivers and firemen to follow them; this is merely a statement of fact with which I agree.

**Mr. Marchand.** — The text seems to imply that the British Railways have a very simple signalling system and the other countries a very complicated one. The other railways seem to be blamed for having complicated signals. I cannot let such a statement pass.

If speed indications are introduced, it is known that there will be some inconvenience as regards reading the signals, but it is also known that there are advantages from the point of view of safety.

I think it is true that certain accidents which have occurred in various countries, particularly in Great Britain, seem to have been caused by the absence or insufficiency of the speed indications.

**Colonel Wilson.** — While it is quite true, as Mr. Marchand says, that there have been accidents on British Railways through excessive speed arising from misreading or disregard of signals, I think it would hardly be fair to say that any of them were due to the absence of speed signalling as such. Signals are disregarded in all countries from time to time and I think that misinterpretation is more likely where the code of aspects is complicated; I understand that the tendency in America is towards simplification. I would support what Mr. Elliot has said, that we should retain this text.

**Mr. Marchand.** — I agree, only I think that this remark refers to speed indications on the open track. In this case, we are talking of the signals at junctions. The point is whether the driver shall be informed of the speed which must not be exceeded on the turn-outs.

When no such signal is given to the driver, he has to work on the basis of instructions which he may forget. This is the reason why certain railways have introduced signals at junctions reminding the driver of the speed which must not be exceeded on the turn-outs.

**Mr. Elliot.** — I do not agree, because the Southern Region has probably the greater number of trains, or at least as great as any other Railway in the world, and we have not found it either necessary or desirable to use this signalling at junction points and it does complicate the reading of signals. I think it is important that the sentence should stand.

**The President.** — I think the discussions will be briefer if we do not bother about complicated signalling such as that used in America. It is a question of deciding whether it is advisable to give speed and direction indications at junctions. In my opinion, we could delete the two sentences as Mr. MARCHAND suggested. If some Administrations have considered it advisable to retain this signalling, it is because they know that it does not cause any inconvenience to the driver. Consequently the sentence could be deleted. When the signals give several indications, as in America, it complicates the drivers' job.

A distinction must be made between signals intended to give many different indications and the case with which we are dealing, signals indicating the speed limits and the direction at junctions. Here, there are no complications.

I would like to know what the Meeting thinks about this.

**Mr. Marchand.**—I agree with Mr. TENTI that the two last sentences of the first paragraph should be suppressed.

**The President.** — First of all, I will ask the Meeting if we should retain the sentence : « This complicates the reading of the signals ». I would like the Delegates in favour of this to raise their hands.

*— The majority were in favour of deleting this sentence.*

**Mr. Cirillo,** *Italian State Railways* (in French). — The second paragraph of Summary 2 after the sentence which has been deleted, seems superfluous to me. It says in effect : « Other railways, notably the British Railways, do not have speed signalling... » There are other railways which do not make use of this method. I suggest we retain the text up to « speed signalling » without the other details. I think that this system has already been dealt with in the report. In my opinion, we should delete it all or stop at « speed signalling ».

**The President.** — Consequently it is suggested that we suppress the second paragraph.

**Mr. Cirillo.** — That we suppress the second paragraph either completely or stop at « ... do not have speed signalling ».

**The President.** — Will those Delegates, who wish the second paragraph to be suppressed, please raise their hands.

*— The majority were in favour of retaining the 2nd paragraph.*

**Mr. Cirillo.** — May I remind you that I suggested suppressing the whole paragraph of stopping short as I indicated.

**The President.** — There is also a second suggestion, that we suppress the se-

cond part of this paragraph, after the words « ... speed signalling ».

**Mr. Elliot.** — I think we should leave the sentence as it is. I do not agree with either of these proposals. I suggest that we should leave it as it stands.

**Mr. Watkins.** — Might I ask what is the objection to it remaining at it is? It is merely a statement of fact.

**The President.** — The vote having been taken, it is understood that the second paragraph will be retained.

**Mr. Delacarte.** — I suggest suppressing the last two paragraphs the text of which seems to me to have been included in the general summaries. We do not think these two paragraphs should be included in general summaries, as they are in fact merely questions of detail.

**The President.** — I will put to the vote the suppression of the third and fourth paragraphs of point 2, which are considered superfluous and perhaps even disputable.

*— The majority are in favour of suppressing these two paragraphs.*

**The President.** — Summary 2 is therefore adopted in the following form :

« 2. The majority of the railways use a system of speed signalling, some of them giving no indication of direction, whilst others combine with their speed signalling some indication of the route to be taken.

« Other railways, notably the British, do not have speed signalling, but use a system of four simple running aspects indicating danger, caution, preliminary caution and clear, with a direction indication at the home signal at a diverging junction. »

**Mr. Dyer.** — *Summary 3 :*

3. The majority opinion is that it is desirable for a driver to know at a junction whether the route which he should take is correctly set up. It is considered sufficient if an indication of a divergence is given at the junction home signal.

**Mr. Marin.** — I should like to know if the word « conducteur » in the French text refers to the driver or train staff.

**The President.** — Naturally it means the driver.

**Mr. Tenti.** — In the past on the Italian Railways, we did consider that the indication of a divergence should not be given only at the home signal but also at the warning signal. Now we have given up using an indication of the direction at the warning signal but we have introduced the lock and block. From the safety point of view, we have not considered as sufficient the indication of direction at the signal close to the junction, We should like to know the opinion of other railways.

**Colonel Wilson.** — I would like to suggest that the paragraph should be slightly modified by saying that it is usually or generally considered that an indication of the direction should be given at the junction home signal. There are certain

exceptional cases on the British Railways where it is considered desirable to give a junction indication at the distant signal also. I suggest a slight modification which will, I think, accord with the views of the last speaker. That is « *usually* considered » or « *generally* considered ».

**Mr. Marin.** — We thought that in particular on single track lines, it was dangerous to put the direction signal only by the junction home signal, as it may happen that the driver may see too late a mistake of the guarding box to avoid running into a train. This is a most important question. I think that an indication of the speed is preferable when accompanied by the safety indication (lock and block). I would like to know if the other railways consider the home signal sufficient without the safety signal.

**Mr. Tenti.** — I would like to know if it is advisable to adopt speed signalling at junctions without completing the installation by the lock and block in order to give the driver in all cases a sufficient guarantee that the route he has to follow is clear.

**Mr. Dyer.** — I would explain once again that the text, as stated here, merely records that it was the majority opinion of the Administrations who replied to the questionnaire. This is simply a record; nothing more than that. It is not for us to decide what we would like.

**The President.** — Different Administrations should be able to provide the information required. For the time being we must limit ourselves to the special report which sums up the replies received.

**Mr. Marchand.** — I would also be in favour of saying « in general » as I would be very astonished to learn that all the Administrations gave the same opinion unanimously.

Moreover, in the text it says « ... is considered sufficient if an indication of *divergence* is given... » I would prefer the word « direction » to « *divergence* ».

**Mr. Watkins.** — The point I would like to make in regard to Colonel WILSON's statement is that in Great Britain practically 80 % of our freight trains are not fitted with vacuum air brakes and we consider it very desirable from the point of view of keeping the traffic moving that the driver should know when he is approaching a diverging line. This is particulary important in fog, otherwise he comes to a stand at the home signal.

**Mr. Dyer.** — I agree with Colonel WILSON's point that we should add the word « generally ». As it stands, it looks as if the whole of the Administrations considered it desirable, while in actual fact it was generally considered. The Summary commences « The majority opinion » and I think it would be better if this read « The opinion of the majority ».

**Mr. Fazio.** — In the second sentence we ought to say : « It is generally considered sufficient if an indication of direction is given at the junction home signal. »

**The President.** — It seems to me that the Meeting has formed its opinion. Are we all agreed that Summary 3 be adopted worded as follows :

« 3. The opinion of the majority is

that it is desirable for a driver to know at a junction whether the route which he should take is correctly set up.

« It is considered, in general, sufficient that an indication of the direction should be given at the junction home signal. »

— *Adopted.*

**Mr. Dyer.** — *Summary 4 :*

4. Although both the multi-lens type and the type of colour light signal with a moving vane with two or three coloured glasses are used to a considerable extent, it is generally considered that the advantage lies with the multi-lens type.

**Mr. Righi.** — I would like to point out that Summary 4 does not give the true opinion of all the Delegates, and I would like the words « it is generally considered » to be replaced by « the majority of Administrations generally consider... ». I would also like to state, that the majority of railways (who replied to the questionnaire) consider that... ».

**The President.** — Agreed. Summary 4 will read :

« 4. Although both the multi-lens type and the type of colour light signal with a moving vane with two or three coloured glasses are used to a considerable extent, it is considered, by the majority of Administrations, that the advantage lies with the multi-lens type. »

— *Adopted.*

**Mr. Dyer.** — *Summary 5 :*

5. With regard to lamp bulbs, the single filament type is preferred as with two filaments, however close together they may be, they cannot both be at the focus of the optical system and the one out of focus gives a reduced visibility which cannot altogether be compensated by increased power. Also both filaments may be disconnected from the supply at the same instant or failure of the second filament may soon follow failure of the first.

— *Adopted without comment.*

**Mr. Dyer.** — *Summary 6 :*

6. It is desirable for the lights of controlled signals to be indicated in the signal box and, at least for automatic signals, for the lamp in the red aspect to be proved alight before the next signal in rear can assume a proceed indication.

**Mr. Marchand.** — A matter of the wording : we should not say « contrôlés » but rather « commandés ».

**The President.** — Agreed. Summary 6 was *adopted* with this slight alteration to the French text.

**Mr. Dyer.** — *Summary 7 :*

7. There should be no confusion between red and yellow lights provided that the colours chosen are distinct and the lenses and glasses are obtained to a strict specification within close limits. No objection is therefore seen to the use of a single yellow aspect by itself or a single red aspect by itself.

**The President.** — No comments ?

— *Adopted.*

**Mr. Dyer.** — *Summary 8 :*

8. On lines equipped with an overhead electric traction system colour light signals should be used systematically though for economic reasons semaphore signals may be retained in some districts where the overhead traction equipment does not interfere too seriously with the view of such signals.

**Mr. Lévi.** — For the sake of the future of electric traction, I demand that this obligation to install colour light signals wherever this method of traction is used be made less rigorous. I suggest saying... « colour light signals should generally be used » and I would add « However the semaphore signals may be retained when the overhead traction equipment does not interfer seriously with the view of these signals ». I would therefore leave out the word « too » which leads to the conclusion that it is essential to have the automatic block everywhere.

**The President.** — Generally lines equipped on the overhead system hinder the visibility of the semaphore signals.

**Mr. Lévi.** — That is why I propose deleting the word « too ».

**Mr Dyer.** — The only thing I have to say is this : that is not a reply to the question. The question is « Are you proposing to use light signals systematically on your electrified lines?

**The President.** — In Summary 8 it is stated that « colour light signals should be used systematically » and to this is added « although for economic reasons semaphore signals may be retained ... » It is not stated that the semaphore signals should be abolished. On the contrary, later on it says that they can be retained under certain conditions as regards visibility.

There is no obligation to replace the semaphore signals by colour light signals. The possibility of retaining them is considered but the opinion is expressed that it is better to suppress them.

**Mr. Lévi.** — I think it would be advisable to correct the text. It is the word « should » combined with the word « systematically » which leave the impression that this is an absolute obligation.

**The President.** — We could get rid of the idea of « should ».

**Mr. Watkins.** — The point is this : I would heartily agree that colour light signals are much the best but it is all a question of money. In England we have not the money to spend and we have, therefore, to keep semaphore where we can.

**The President.** — We might reword this summary as follows :

« 8. On lines electrified on the overhead system, it is preferable to adopt colour light signalling. Nevertheless, semaphore signalling can be retained so long as the electric traction equipment does not seriously impair the visibility of the signals. »

Would you all agree to this text?

— *Adopted.*

**Mr. Dyer.** — *Summary 9 :*

9. It is better from the point of view of locating and sighting the signals and to avoid vibration of the light beam and damage to lamp filaments to fix the signals on separate posts rather than fix them to the catenary structures.

— *Adopted without comment.*

**Mr. Dyer.** — *Summary 10 :*

10. Flashing lights are used by several countries but for different purposes.

— *Adopted.*

**The President.** — This brings us to the *General Remarks*.

**Mr. Dyer.** — *General. Summary 1 :*

1. With one or two exceptions the average number of breakdowns of all kinds in automatic signalling sections is less than one per signal per year. This is considered to be a remarkable result with the equipment concerned. The number of failures prejudicial to safety is practically negligible.

**The President.** — No comments?

— *Adopted.*

**Mr. Dyer.** — *Summary 2 :*

2. Automatic signals may be passed at danger under two systems :

(*a*) only after receipt of a telephone authorisation from a signal box or station and

(*b*) under certain rules without telephone authorisation, the signals which may be so passed being indicated in some manner such as by a marker light or other sign.

The system requiring authorisation by telephone would seem to be the more desirable where this can be arranged.

**Mr. Marchand.** — I suggest that we omit the last sentence, which gives rise to much controversy to enable us to agree on this subject.

**Mr. Watkins.** — I think this last paragraph should be retained.

**The President.** — Permission given by telephone is less safe than by the signal.

**Colonel Wilson.** — I think there may perhaps be a little confusion here. The British Railways have always considered it desirable that some definite instructions should be given, and the telephone is a suitable means for that purpose. It seems to me to depend fundamentally on whether one is working absolute block or permissive block. Where absolute block systems are in use it seems to me that telephone instructions is the only way.

**Mr. Moulart.** — I am of the same opinion as Mr. Marchand. On lines with heavy traffic, it is impossible to stop the train and send a telephone message. On the Brussels-Antwerp line, for example, this would make the services impossible. With the automatic block the situation of a train on the line is not known at the ends.

**The President.** — It seems to me that the majority are in favour of suppressing the last paragraph. It is not forbidden to make use of the telephone, but the majority are of the opinion that preference should not be given to telephone authorisations.

Does everyone agree? *(Agreed).*

— *Summary 2 of the General Remarks is therefore adopted* apart from the last paragraph, and the text reads :

« 2. Automatic signals may be passed at danger under two systems:

« *a*) only after receipt of a telephone authorisation from a signal box or station, and

« *b*) under certain rules without telephone authorisation, the signals which may be so passed being indicated in some manner such as by a marker light or other sign. »

I would now like to go back to Sum-

mary 2 of Chapter II, which was left in abeyance just now.

To sum up the discussions which took place on this subject, I would say that the different suggestions made related to the advantages from the operating point of view rather than to the technical difficulties. Mr. FAZIO put forward the following suggestion : « The advantage of the push-button or switch system over levers individually interlocked is above all of an operating character ».

From the operating point of view, I think we are all agreed about this.

**Mr. Lévi.** — I would agree to this wording so long as it was completed by the sentence : « Espècially if it makes possible the automatic cancellation and recording of routes ».

**The President.** — Are there any objections to adopting the new suggestion put before us, namely : « The advantage of the free push-button or switch system over levers individually interlocked is above all of an operating character, particularly if it makes possible the automatic cancellation and recording of the routes ».

**Colonel Wilson.** — If the advantages of the push-button system are on the operating side, I wonder if it is necessary to add the second half?

**Mr. Marchand.** — We must deal with the question from the operating angle, and it is interesting to note what advantages the operating will derive from the use of the push-button system. These are advantages for the pointsmen and for the staff using the equipment, and which it is of interest to underline.

**Mr. Dyer.** — I would like to stress the fact that the cancellation and preliminary recording of the routes is not a speciality of the push-button system; it can also be obtained with the lever system.

**Voices.** — No, No.

**Mr. Lévi.** — In our opinion, the realisation of the automatic cancellation and setting up of the routes implies the use of push-buttons or levers which automatically return to the normal position. We suggest the addition of the sentence in question because the push-button is essential when automatic cancellation is required, and it seems to us essential to bring out the advantage of this system from the operating point of view.

**The President.** — We have therefore two suggestions :

1° that of Mr. FAZIO which you already know;

2° that of Mr. FAZIO with the addition suggested by Mr. LÉVI.

Everyone agrees I believe to the first sentence. We can therefore consider this as acceptable if there are no other objections.

— *The first part is adopted.*

I will ask you to vote on the addition suggested by Mr. LÉVI, i. e. « particularly if it makes possible the automatic cancellation and setting up of the routes. »

— *There were only 10 votes for the addition by* M. LÉVI, *and 25 against.*

**The President.** — The suggestion is ierefore not accepted. We will retain ie first sentence without the addition iggested by Mr. LÉVI.

**Mr. Lévi.** — If this suggestion is not :ceptable to the whole of the Section, ›uld we not mention that : « Certain dministrations find additional advan- ges in the system when it makes possible ie automatic cancellation and setting up the routes ».

**The President.** — I think the second ntence might be acceptable if modified this way *(Agreed)*.

Summary 2 of Chapter II after checking of the wording will therefore be as follows :

« 2. The advantage of the free push button or switch system over levers individually interlocked is above all, of an operating character. Certain administration are specially of this opinion when the system permits the automatic setting up and cancellation of routes. »

Before bringing the meeting to a close, I want to thank Mr. DYER, Special Reporter and all the Delegates who took part in the discussions during our meetings.

— The meeting ended at 12.15 p.m.

## Meeting of the 2nd October 1950.

PRESIDENT : DR. G. C. PALMIERI, ENGINEER.

— The meeting began at 9.15 a.m.

**The President.** — Gentlemen, the exa- ination of Question VIII is on the genda for to-day's meeting. Before ginning to discuss this question, I must mind you that we did not come to any ial decision in connection with *Sum- ary 6* of *Chapter III* of Question IX.

After a rather lengthy discussion of this oint, we decided that a small committee nsisting of Messrs MARCHAND, DYER id LÉVI and one or two other delegates ould agree a text likely to be approved the Meeting. This Committee has afted the text I am now going to read ›u, and all the technical experts agree at it expresses the idea in question very early.

The President then read the original ›rding of Summary 6 and then the *new xt suggested by the special committee*, afted as follows :

« 6. It is fairly general practice to lay down a minimum value of resistance for the track circuit test shunt below which it should never fall. A different minimum value is usually stipulated for different types of track circuit, but except on a few of the railways, the lowest figure is 0.15 ohm. It is considered that this value is rather lower than could be desired, and consideration should be given to the best means of raising it in order to increase the safety factor. »

If the Meeting has no objections to raise in connection with this new text, we will take it as adopted, and submit it to the approval of the next Plenary Meeting.

— *No comments being made, the new text of Summary 6, Chapter III is adopted.*

— The Section then went on to discuss Question VIII.

# DISCUSSION AT THE PLENARY MEETING.

## Meetings held on the 29th September and 4th October 1950.

Dr. Eng. G. di Raimondo, President, in the Chair.
General Secretaries : Mr. P. Ghilain and Dr. Eng. M. Valdivieso.
Assistant General Secretary : Mr. Ch. E. Whitworth.

**Mr. Ghilain,** *General Secretary.* — We now come to Question IX. The Summaries for this Question, apart the point 6 of Chapter III, were published in the *Daily Journal of the Congress*, No. 3 and 4.

— *These Summaries raised no objections.*

**The President.** — We consider the Summaries for Question IX as ratified.

— *Summary 6, Chapter III, of which the new text appeared in the Daily Journal of the Congress, No. 6, was ratified during the Plenary Meeting of the 4th October 1950.*

The complete text of the Summaries for Question IX is as follows :

### SUMMARIES.

#### I. Remote control and operation of points and signals by means of relays.

« 1. Except in North America where « special conditions obtain in that long « lengths of line have been operated on « the « Train Order » system, remote « control of signalling by means of a « coded relay system has not been used « to a very large extent.

« 2. A number of other railways « have, however, used the system to « some extent and intend to extend the « system as circumstances permit.

« 3. Remote control generally implies « the use of automatic block signalling « and this makes it possible to do away « with present safety measures.

« 4. The system has been employed « to increase the capacity of lines, to « secure economies in operating or to « bring about greater safety.

« 5. The financial result is generally « decided by the cost of the coded relay « equipment as against the cost of the « number of controlling circuits needed « for the required number of signalling « functions over the distance involved.

« 6. No special maintenance arrange- « ments have been found to be neces- « sary and there has been no particular « difficulty in obtaining suitable main- « tenance staff though special training « required.

**I. Electric power signalling installations. — Interlocked levers, relay interlocking, free push button or switch systems.**

« 1. Though free push button and switch systems are being used to an increasing extent, certain administrations consider that sufficient working experience has not yet been obtained to say whether such systems or the well-tried power signalling systems using miniature interlocked levers would be preferred.

« 2. The advantage of the free push button or switch system over levers individually interlocked is above all, of an operating character. Certain administrations are specially of this opinion when the system permits the automatic setting up and cancellation of routes.

« 3. It is not considered that greater technical knowledge is required on the part of the maintenance staff for maintaining free push button or switch systems than for interlocked lever systems but proper training of the staff is necessary owing to the much larger number of circuits and relays associated with push button and switch systems.

« 4. There is little difference in the overall prime cost of the different systems or in the cost of day to day maintenance. The number of relays requiring periodical overhaul, however, is greater in the case of the push button and switch systems.

« 5. It is considered that free push button or switch systems give rise to « rather more serious and complicated « problems for the traffic department in « case of breakdown than with interlocked lever systems. This being so « it is necessary to design the system so « that a fault can be rectified quickly « such as by the use of plug-in relays.

« 6. Opinions as to whether push « buttons or switches should be fitted on « a geographical panel or a separate « desk panel are divided.

**III. Automatic signalling. Track circuits using permanent current or coded current.**

« 1. Coded current track circuits are « used fairly extensively in North Ame« rica and to some extent in France and « in new installations in Italy. Some « experimental sections have been instal« led on a few railways and the system « is under consideration by others.

« 2. Except where continuous cab « signalling is being contemplated, the « advantages claimed for the coded cur« rent system do not appear to com« pensate for the increased cost and « complication, except in special cases.

« 3. There is full confidence in the « correct operation of permanent current « track circuits and coded current cir« cuits both from the point of safety and « regular operation.

« 4. It is not practicable to say what « maximum length of track circuit is « advisable as this depends upon several « variable factors such as ballast condi« tions and type of rail fastenings.

« 5. The train shunt is governed by « the maximum variation in the ballast

« resistance and by the minimum value « to which this falls. Under conditions « of maximum ballast resistance the « train shunt cannot be higher than the « minimum value to which the ballast « resistance falls. The train shunt is « therefore not governed by the length « of a track circuit alone. Consequently « actual train shunts for track circuits of « various lengths cannot be given as so « much depends upon other factors.

« 6. It is fairly general practice to lay « down a minimum value of resistance « for the track circuit test shunt below « which it should never fall. A different « minimum value is usually stipulated « for different types of track circuit, but « except on a few of the railways, the « lowest figure is 0.15 ohm. It is con- « sidered that this value is rather lower « than could be desired and considera- « tion should be given to the best means « of raising it in order to increase the « safety factor.

## IV. Light signalling. Signalling for direction and speed.

« 1. The systems of light signalling « used by the different railways vary so « much and each railway, owing to the « amount of signalling already in use, is « so committed to its own system that « it would not be practicable to adopt « a uniform system for all railways even « if a common system could be agreed « upon.

« 2. The majority of the railways use « a system of speed signalling, some of « them giving no indication of direction, « whilst others combine with their speed « signalling some indication of the route « to be taken.

« Other railways, notably the British, « do not have speed signalling, but use « a system of four simple running « aspects indicating danger, caution, « preliminary caution and clear, with a « direction indication at the home signal « at a diverging junction.

« 3. The opinion of the majority is « that it is desirable for a driver to « know at a junction whether the route « which he should take is correctly « set up.

« It is considered, in general, suffi- « cient that an indication of the direc- « tion should be given at the junction « home signal.

« 4. Although both the multi-lens type « and the type of colour light signal « with a moving vane with two or three « coloured glasses are used to a con- « siderable extent, it is considered, by « the majority of administrations, that « the advantage lies with the multi-lens « type.

« 5. With regard to lamp bulbs, the « single filament type is preferred as « with two filaments, however close « together they may be, they cannot « both be at the focus of the optical « system and the one out of focus gives « a reduced visibility which cannot « altogether be compensated by in- « creased power. Also both filaments « may be disconnected from the supply « at the same instant or failure of the « second filament may soon follow « failure of the first.

« 6. It is desirable for the lights of « controlled signals to be indicated in « the signal box and, at least for auto- « matic signals, for the lamp in the red « aspect to be proved alight before the « next signal in rear can assume a « proceed indication.

« 7. There should be no confusion « between red and yellow lights provided « that the colours chosen are distinct « and the lenses and glasses are obtained « to a strict specification within close « limits. No objection is therefore seen « to the use of a single yellow aspect by « itself or a single red aspect by itself.

« 8. On lines electrified on the over- « head system, it is preferable to adopt « colour light signalling. Nevertheless, « semaphore signalling can be retained « so long as the electric traction equip- « ment does not seriously impair the « visibility of the signals.

« 9. It is better from the point of « view of locating and sighting the « signals and to avoid vibration of the « light beam and damage to lamp fila- « ments to fix the signals on separate « posts rather than fix them to the « catenary structures.

« 10. Flashing lights are used by « several countries but for different « purposes.

**General.**

« 1. With one or two exceptions the « average number of breakdowns of all « kinds in automatic signalling sections « is less than one per signal per year. « This is considered to be a remarkable « result with the equipment concerned. « The number of failures prejudicial to « safety is practically negligible.

« 2. Automatic signals may be passed « at danger under two systems:—

« *a*) only after receipt of a telephone « authorisation from a signal box or « station, and

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M. WEISSENBRUCH & Co. Ltd.
Printer to the King

(Manag. Dir.: P. de Weissenbruch,
238, chaussée de Vleurgat, XL)

PRINTED IN BELGIUM

Edit. responsible : P. Ghilain